DIHLABENG LOCAL MUNICIPALITY

TENDER NO: PW029/2023

PROVISION OF ROADS AND STORM WATER CIVIL INFRASTRUCTURE FOR A PERIOD OF THIRTY SIX (36) MONTHS FROM DATE OF APPOINTMENT

PROCUREMENT DOCUMENT

NAME OF TENDERER:	
ADDRESS	
OFFERED TOTAL ***(refer to Part C2)***	

NOVEMBER 2023

PREPARED AND ISSUED BY:

Directorate: Finance:
Supply Chain Management Unit
Dihlabeng Local Municipality,
PO Box 551, Bethlehem, 9700

CONTACT FOR ENQUIRIES REGARDING SPECIFICATIONS:

Sefetse Thobejane

Roads and Stormwater

Tel. Number: **058 303 5732**

DIHLABENG LOCAL MUNICIPALITY

T1.1. TENDER NOTICE & INVITATION TO TENDER

DIHLABENG LOCAL MUNICIPALITY HEREBY INVITES PROSPECTIVE BIDDERS TO TENDER FOR PW029/2023: PROVISION OF ROADS AND STORM WATER CIVIL INFRASTRUCTURE FOR A PERIOD OF THIRTY SIX (36) MONTHS FROM DATE OF APPOINTMENT

INVITATION TO BID ADVERTISEMENT

Suitable offers are hereby invited for the following bids:

Bid Name	Bid No.	CIDB Grading	Compulsory briefing session	Evaluation and Adjudication Criteria and Preference Points	Closing Date	Enquiries
Appointment of service provider for provision of roads and stormwater civil infrastructure for a period of thirty six (36) months from date of appointment. **CIDB REF NR: 100090207**	PW029/2023	5CE or Higher	N/A	**Bids will be evaluated on:** • Stage 1: Responsiveness • Stage 2: Functionality • Stage 3: Financial Offer and Preference Evaluation (80/20 Scoring Points) • Stage 4: Risk Analysis	8th January 2024	Mr S Thobejane Tel.: 058 303 5732 sefetset@dihlabeng.co.za dlmroads@gmail.com

Bid documents will be available from **12:00** on **Tuesday 28 November 2023**, upon payment of a cash non-refundable document fee of R1 000,00 per set, at the Dihlabeng Local Municipality, 9 Muller Street, Bethlehem, 9700.

Please note that tender document can also be accessed/download for free on the Dihlabeng Local Municipality website http://www.dihlabeng.gov.za/strategic-documents/bid-documents. **And on eTender Portal.**

Bids are to be completed in accordance with the conditions and bid rules contained in the bid documents and must be sealed together with supporting documents and externally endorsed **WITH THE CONTRACT NUMBER AND DESCRIPTION** and placed in bid box, on the Ground Floor, Dihlabeng Local Municipality, 9 Muller Street, Bethlehem, 9700 not later than **12:00 on or before the date stipulated above.**

Bidders' attention is specifically drawn to the provisions of the bid rules and evaluation criteria (including Functionality) which are included in the bid documents. The highest or any bid will not necessarily be accepted and the Council reserves the right not to consider any bid not suitably endorsed or comprehensively completed. Bids completed in pencil will be regarded as invalid bids. Bids may only be submitted on the documentation provided by the Dihlabeng Local Municipality.

The compulsory documents stated in the document must be submitted together with the Bid Document
With effect from 1 July 2016, Dihlabeng Local Municipality must use and verify suppliers registered on the Central Supplier Database - https://secured.csd.gov.za/.
Failure to register will result in Dihlabeng Local Municipality not being able to conduct business with your company/ entity.

Bids will be opened in public as soon as possible after the closing time. The municipality reserves the right to reject any and all bids at any time

Everyone, Every Household, Every Entity – A Testimonial of our Excellent Service!

M Ntheli
MUNICIPAL MANAGER

9 Muller Street East
P.O Box 551
BETHLEHEM
9700
www.dihlabeng.gov.za

DIHLABENG LOCAL MUNICIPALITY

PART A
INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE DIHLABENG LOCAL MUNICIPALITY					
BID NUMBER:	**PW029/2023**	CLOSING DATE:	**08 JANUARY 2024**	CLOSING TIME:	**12h00**
DESCRIPTION	**PROVISION OF ROADS AND STORM WATER CIVIL INFRASTRUCTURE FOR A PERIOD OF THIRTY SIX (36) MONTHS FROM DATE OF APPOINTMENT**				
THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (MBD7).					

BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT *(STREET ADDRESS)*

Dihlabeng Local Municipality, 9 Muller Street, Bethlehem 9700					
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 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]					
1. ARE YOU THE ACCREDITED REPRESENTATIVE **IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?**	Yes ☐ No ☐ [IF YES ENCLOSE PROOF]		**2.** ARE YOU A FOREIGN BASED SUPPLIER FOR **THE GOODS /SERVICES /WORKS OFFERED?** ☐ ☐	Yes ☐ No ☐ [IF YES, ANSWER PART B:3]	
TOTAL NUMBER OF ITEMS OFFERED			TOTAL BID PRICE	**R**	
SIGNATURE OF BIDDER			DATE		
CAPACITY UNDER WHICH THIS BID IS SIGNED					

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:		**TECHNICAL INFORMATION MAY BE DIRECTED TO:**	
DEPARTMENT	Supply Chain Management	CONTACT PERSON	**Sefetse Thobejane**
CONTACT PERSON	**Justice Tsatsa**	TELEPHONE NUMBER	**058 303 5732**
TELEPHONE NUMBER	**058 303 5732**	FACSIMILE NUMBER	N/A
FACSIMILE NUMBER	N/A	E-MAIL ADDRESS	sefetset@dihlabeng.co.za
E-MAIL ADDRESS	molukisit@dihlabeng.co.za		dlmroads@gmail.com

DIHLABENG LOCAL MUNICIPALITY

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, 2022, 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: .....

DIHLABENG LOCAL MUNICIPALITY

DIHLABENG LOCAL MUNICIPALITY

Part T1: Tendering procedures

Pages

DIHLABENG LOCAL MUNICIPALITY

T1.2. TENDER DATA

The Standard Conditions of Tender are as published in Annexure C of the CIDB Standard for Uniformity in Engineering and Construction Works Contract, August 2019

The Standard Conditions of Tender make several references to the Tender Data for details that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the standard conditions of tender. Each item of data given below is cross-referenced to the clause in the Standard Conditions of Tender to which it mainly applies.

The following variations, amendments and additions to the Standard Conditions of Tender as set out in the Tender Data below shall apply to this tender:

C.1 General

C.1.1 Actions

Add the following:

The Employer is the Dihlabeng Local Municipality, represented by the Roads and Stormwater Department.

C.1.2 Tender Documents

Add the following:

The following documents form part of this contract:

VOLUME 1: The General Conditions of Contract for Construction Works, Third Edition, 2015, prepared by the South African Institution of Civil Engineering (SAICE). This publication is available and tenderers must obtain copies at their own cost from the South African Institution of Civil Engineering (SAICE), Private Bag X200, Halfway House 1685, Tel: (011) 805 5947, Fax: (011) 805 5971, e-mail: civilinfo@saice.org.za.

VOLUME 2: The COLTO Standard Specifications for Road and Bridge Works for State Road. The conditions of tender are the Standard Conditions of Tender as published in Annex F of the CIDB Standard for Uniformity in Construction Procurement, Board Notice 136 Government Gazzette No. 38960 of 10 July 2015. The Standard Conditions of Tender can be obtained from the CIDB's website. Authorities are the Standard Specifications as detailed in the Bill of Quantities / Schedule of Rates.

Volumes 1 and 2 may also be inspected, by appointment, at the Municipal office during normal office hours.

The tender documents issued by the Employer comprise:

VOLUME 3: The Contract Document (this document), in which is bound:

The Tender

Part T1: Tendering procedures
T1.1 Tender notice and invitation to tender
T1.2 Tender data

Part T2: Returnable Documents
T2.1 List of returnable documents
T2.2 Returnable schedules

The Contract

Part C1: Agreements and Contract Data
C1.1 Form of offer and acceptance
C1.2 Contract data
C1.3 Form of Performance Guarantee
C1.4 Occupational Health and Safety Agreement

C1.5 Protection of the Environment Declaration
C1.6 Insurance Broker's Warranty

Part C2: Pricing Data
C2.1 Pricing Assumptions
C2.2 Bills of Quantities

Part C3: Scope of Work
C3.1 Description of the Works
C3.2 Engineering Drawings
C3.3 Work Specifications

Part C4: Site information
C4.1 Site information

VOLUME 4: Drawings (listed in C3.2 Engineering)

Volume 3 is deemed the "Returnable Document" which must be returned to the Employer in terms of submitting a tender offer.

C.1.4 **Communication and employer's agent**

Add the following:

Attention is drawn to the fact that verbal or any other form of communication, given by the Employer, its employees, agents or advisors during site visits/clarification meetings or at any other time prior to the award of the Contract, will not be regarded as binding on the Employer, unless issued formally by the Employer in writing to tenderers through its Accounting Officer or his nominee. Only information issued formally by the Employer in writing to tenderers will be regarded as amending the Tender Documents.

The Employer's Representative, for the purposes of any communication between the employer and Tenderer is:

Name: Sefetse Thobejane

Physical Address:	Postal Address:
9 Muller Street	Dihlabeng Local Municipality
Head Quarters Offices	Directorate: Public Works
Bethlehem 9700	P.O. Box 551
Telephone: 058 303 5732	Fax: 058 303 5732

E – mail: sefetset@dihlabeng.co.za or dlmroads@gmail.com

An Employers Agent (i.e. Consulting Engineer) may be appointed to act on behalf of the Employer for the implementation of a Work Assignment / Project.

C1.6 ***Amend Clause to read:***

Tenders received who are responsive will be admitted onto a roster, thereafter assignments will be allocated as and when required by the Municipality.

C.1.6.2 A competitive negotiation procedure will not be followed.

C.1.6.3 A two-stage proposal procedure will not be followed.

C.2.2.1.2 Construction Industry Development Board (CIDB) Registration

Only those tenderers who are registered with an active status with the CIDB, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations, **for a CE class of construction work**, are eligible to have their tenders evaluated.

Joint Ventures are eligible to submit tenders provided that:

a) every member of the joint venture is registered with an active status with the CIDB;
b) the lead partner has a contractor grading designation of not lower than two level below the required grading designation in the CE class of construction work; and
c) the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a CE class of construction work or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations.

Notwithstanding the above, tenderers who are capable of being so registered with an active status with the CIDB prior to the evaluation of submissions may be evaluated at the sole discretion of the Employer (the evaluation of tenders takes place when the Employer's Bid Evaluation Committee meets to make a final recommendation to the Bid Adjudication Committee).

For alpha-numeric associated with the Contractor Grading Designations see Annex G attached. Refer also to Schedule 15.

C.2.7 **Compulsory clarification meeting**

Add the following:

The compulsory clarification meeting is not applicable to this tender. Enquiries can be forwarded to the contact persons indicated in this tender between 8h00 and 16h00 on Monday to Friday. All the enquiries must be communicated until five (5) days before the closing date.

C.2.10 **Pricing the tender offer**

Add clause C.2.10.5:

C.2.10.5 **Tenders must only price works that is in line with their capabilities**. Tenderers must therefore not provide rates for work items that can-not be completed to the required specifications. Tenderers must not provide rates for work items that are outside of the scope and capabilities of the Tenderer. Where the tenderer has stipulated additional conditions tied to a submitted rate, the rate will be deemed null and void.

C.2.12 No alternative tenders allowed.

C.2.13 Submitting a tender offer

C.2.13.2 *Replace clause C.2.13.2 with:*

1. Documents may only be completed in non-erasable ink.
2. The use of correction fluid/tape is not allowed.
3. In the event of a mistake having been made, it shall be crossed out in ink and beaccompanied by an initial at each and every alteration.
4. Alterations or deletions not signed by the Tenderer may render the tender invalid.
5. All bids must be submitted in writing on the official forms supplied (not to be re-typed).

C.2.13.4 *Add to clause C.2.13.4:*

Certificate of Authority for Joint Ventures and the Joint Venture Agreement must be completed and submitted as part of the bid documents.

1. No amendments to Joint Venture Agreement may be made without the prior approval of the Municipality; if not accepted by the Municipality and the Joint venture continue without approval the Joint venture contract can be cancelled as if poor performance had taken place;
2. Joint venture will only qualify for points for their B-BBEE status level as a legal entity, provided that the entity submits, together with the submission of the bid, their B-BBEE status level certificate issued in the name of the Joint venture.
3. All members of the Joint venture must submit, with the bid documents:
    - a valid tax clearance certificate or SARS tax pin, individually;
    - an agreement that clearly provides clarity of Profit and liability sharing; and
    - a resolution taken by the board of directors of the Joint venture and other information that agrees with the Joint Venture agreement.

C.2.13.5 *Add the following to C.2.13.5:*

The Employer's address for delivery of tender offers and identification details to be shown on each tender

offer package are:

Location of tender box:	Dihlabeng Local Municipality building 9 Muller Street, Bethlehem
Identification details:	**Tender Box**
Title of tender:	**PROVISION OF ROADS AND STORM WATER CIVIL INFRASTRUCTURE FOR A PERIOD OF THIRTY SIX (36) MONTHS FROM DATE OF APPOINTMENT**

Sealed tenders (including any alternative tenders) with the Tenderer's name and address and the endorsement "**TENDER NO.: PW029/2023: PROVISION OF ROADS AND STORM WATER CIVIL INFRASTRUCTURE FOR A PERIOD OF THIRTY SIX (36) MONTHS FROM DATE OF APPOINTMENT**" on the envelope(s), must be placed inthe appropriate official tender box at the abovementioned address.

C.2.13.9 *Replace clause C.2.13.9 with:*
Mailed, telephonic, telegraphic, telex, facsimile or emailed tender offers will not be accepted.

C.2.15 **Closing time**

C.2.15.1 *Add to clause C.2.15.1:* The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender. Any Tender received after the appointed time for the closing of tenders will not be considered and will be filed unopened with the other tenders received or returned to the Tenderer at his/her request.
Sealed tenders, with the **"Tender Number and Title"** clearly endorsed on the envelope, and must be deposited in the **tender box**.
The tender must be lodged by the Tenderer in the tender box at the Dihlabeng Municipal Offices, 9 Muller Street, Bethlehem. Tenders that are deposited in the incorrect box will not be considered.

C.2.16.1 *Add to clause C.2.16.1:* Tender offer validity period is 90 days.

C.2.20 *Add to clause C.2.20*:
The Contractor is required to submit together with this document a signed Occupational Health and Safety Agreement and a letter of good standing from the Compensation Commissioner, or a licensed compensation insurer.

Proof of Insurance and Guarantees are not required at tender stage. The service provider must provide proof that the necessary Insurance and Guarantees are in place when being considered for a works package. The Insured amount will depend on the requirements of a works package.

C.2.23 *Add to clause C.2.23*:

The Tenderer must complete and submit all forms and certificates contained in this Tender. The tenderer must also submit with this tender all requirements as stated in these forms and certificates, as listed below:

1. Tender Details
2. Authority to Bid form
3. Certificate of Authority for Joint Venture
4. MBD 2 Tax Clearance Certificate Requirements
5. MBD 4 Declaration of Interest
6. MBD 5 Declaration for Procurement above R10 Million
7. MBD 6.1 Preference Points Claim Form
8. MBD 8 Declaration of Bidders Past Supply Chain Management Practices
9. MBD 9 Certificate of Independent Bid Determination
10. MBD10 Certificate for Payment of Municipal Services
11. Functionality Schedules 9 and 10
12. Form of Offer and Acceptance
13. Declaration by Tenderer
14. Occupational Health and Safety Agreement
15. A letter of good standing from the Compensation Commissioner, or a licensed compensation insurer.

C.3.4.1 *Add to clause C.3.4.1:*
Tenders shall be opened in public at the Dihlabeng Municipal Offices as soon as possible after the closing time for the receipt of tenders.

C.3.8 **Test for responsiveness**

C3.8.2 *Add the following two sub-clauses after C.3.8.2:*
Tenders will be considered non-responsive if, inter alia:

a) the tender is not in compliance with the Scope of Work and the provisions set out in the tender data.
b) has not signed authority to sign bid certificate.
c) the tenderer does not comply with the CIDB registration (active status) and contractor grading designation specified in C.2.1.1.2 above;
d) the tenderer has failed to clarify or submit any supporting documentation within the time for submission stated in the Employer's written request as stated in C.2.17 and C2.20;
e) the tendering entity's experience, and tenderer's key staff and their experience as tendered in Schedules 8 and 9 has failed to achieve the minimum requirements in terms of eligibility criterion as stated in C.2.1.1.3.
f) the tenderer has failed to attend the compulsory site visit / tender clarification meeting and failed to attached the signed certificate (N/A).

Tenders may also be declared non-responsive if it is determined on reasonable grounds or evidence that the tenders are submitted by:

g) tenderers who, notwithstanding having submitted duly completed certificates of independent tender determination are nevertheless deemed to have knowledge of the contents of any other tenderer's offer and/or a certificate is not true and correct in every respect;
h) tenderers in a horizontal relationship which has the effect of substantially preventing or lessening competition in a market, subject to the exceptions as set out in section 4(1)(a) of the Competitions Act, 89 of 1998;
i) tenderers who are presumed to be firms engaged in a restrictive horizontal practice as contemplated in section 4(1)(b) read with section 2 of the Competitions Act, 89 of 1998;
j) tenderers in a vertical relationship which has the effect of substantially preventing or lessening competition in a market, subject to the exceptions as set out in section 5(1) of the Competitions Act, 89 of 1998.

C.3.11 Evaluation of tender offers

C.3.11.1 General

Acceptable bids will be evaluated in Four (4) stages, namely:

a) Stage 1: Responsiveness

b) Stage 2: Functionality

c) Stage 3: Price and Preference

d) Stage 4: Risk Analysis

Stage 1: Tender Responsiveness

The following submissions are the requirements for evaluating each bid for responsiveness. The Bidder who fails to submit the following will be disqualified immediately:

1. Certificate of Authority for Signatory.
2. Joint Venture Agreement and Power of Attorney, in case of Joint Venture.
3. Proof of payment (municipal account/statement) of Municipal Services, which is not more than three (3) months old and not more than ninety (90) days in arrears. If Municipal Services are paid by the Lessee, a copy of municipal account/statement and a valid Lease Agreement **(indicating the municipal account payer and the validity period of the contract)** must be attached, should the municipal services be paid by the Landlord/owner, a valid Lease Agreement **(indicating the municipal account payer and the validity period of the contract)** must be attached.
4. Proof of CSD Registration Report which is Valid/Compliant from the date of availability of tender document.
5. The bidder must provide a Valid Letter of Good Standing (COIDA) relevant to Civil Engineering works.
6. The bidder must provide a Valid CIDB Grading Certificate relevant to the tender requirements.
7. The tenderer is required to submit with his/her tender a letter of intent from an approved insurer undertaking to provide the Performance Bond to the value of 10% of tendered value.
8. The document must be completely filled in Black Ink & corrections are countersigned.
9. Bill of Quantities must be completely filled with Black Ink not erasable fluid.
10. A rate/amount is to be entered against all items in the schedule of fees/Bill of Quantities, an item against which no rate/amount is entered will lead to immediate disqualification due to unfair price advantage.
11. The bidder must provide the recent 3 Years Audited Financial Statements, preferably (2021 / 2022 / 2023). Should the tenderer not qualify for Audited Financial Statements, proof must be attached.
12. Tender documents must be submitted as one (1) original, and one (1) scanned copy (PDF) of the original completed in a flash drive with all exhibits and forms required included in the returnable schedule.

Stage 2: Functionality

A functionality evaluation will be carried out, responsive bids will be admitted onto a roster, thereafter work assignments will be allocated as and when required by the Municipality.

All information provided by the Tenderer for the Functionality Assessments, must pertain to the tenderer's own internal experiences etc., and not that of an external specialist or other contractor. The functionality evaluation will relate to the tenderer's ability to provide a quality service to the Municipality, therefore the tenderers experience will be evaluated.

Tenderers are required to complete all the Functionality Schedules as listed in the Returnable Schedules. Tenderers are to provide information that is in line with their CIDB category. Evaluations will be based on the Tenderers ability to complete works that is in line with the CIDB category. Failure to complete the Functionality Schedules will result in 0 (zero) scoring.

PRE-QUALIFICATION CRITERIA: ELIGIBILITY FOR SPECIFIC WORK ASSIGNMENTS		
TYPICAL WORK ASSIGNMENTS		CIDB GRADING REQUIRED
1.	Roads and Stormwater works over R3 million	5CE or higher

The functionality evaluation will focus on **civil engineering experience, roadworks and stormwater related works**. Tenderers scoring less than 60 points will not meet the functionality criterion. Successful tenderers will be placed on a panel for consideration for award of a Work Package. The panel will be valid until the tender expires.

Note: Only the information provided on the schedules for Functionality evaluation and or attached thereto, will be considered to confirm the tendering entity and key staff meets the eligibility criteria. Failure to complete PRE-QUALIFICATION/FUNCTIONALITY schedules may result in the tender being non-responsive.

FUNCTIONALITY EVALUATION SCORING CRITERIA

<table>
<tr><th>No.</th><th>Activity</th><th>Maximum points</th><th>Minimum points</th></tr>
<tr><td>1.</td><td><u>Experience</u>
Demonstrated experience in the construction of roads and/or infrastructure projects. Bidders have to furnish copies of completion certificates for all successfully completed projects. Failure to submit completion certificates will lead to no award of points.
<u>Number of projects and the value of the largest project in roads and storm water projects completed in the past ten (10) years</u> (Attach Appointment Letters with associated Completion Certificates or signed Reference Letter/s indicating successful completion of the projects on the Employer Letterhead)
5 or more Projects above R 4 000 000 each (30 points)
3-4 projects above R 4 000 000 each (20 points)
1-2 projects above R 4 000 000 each (10 points)</td><td>30</td><td>20</td></tr>
<tr><td>2.</td><td><u>Key Staff</u>
NB: Full CVs of the proposed key members of the Team and Professional Affiliations as well as their affidavits allowing use of their CVs to be attached. Failure to attach any of these will result in no points being allocated
<table>
<tr><th></th><th colspan="8">QUALITY CRITERIA: APPLICATION EXPERIENCE</th></tr>
<tr><th></th><th>POSITION</th><th>MINIMUM NQF LEVEL</th><th colspan="6">YEARS OF EXPERIENCE</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Project Manager
Minimum Bachelor’s Degree/ B Tech in Civil Engineering or Construction Management experience in roads and storm water construction projects</td><td rowspan="2">7</td><td colspan="2">5 - 9</td><td colspan="2">10 - 14</td><td colspan="2">>15</td></tr>
<tr><td>Points</td><td>3</td><td>Points</td><td>5</td><td>Points</td><td>7.5</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Site Agent
Minimum Bachelor’s Degree/ B Tech in Civil Engineering or Construction Management.
Experience in roads and storm water construction projects</td><td rowspan="2">7</td><td colspan="2">5 - 9</td><td colspan="2">10 - 14</td><td colspan="2">>15</td></tr>
<tr><td>Points</td><td>3</td><td>Points</td><td>5</td><td>Points</td><td>7.5</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Foreman
Accredited Trade in Built Environment or Higher.
Experience in roads and storm water construction projects</td><td rowspan="2">4</td><td colspan="2">5 - 9</td><td colspan="2">10- 14</td><td colspan="2">>15</td></tr>
<tr><td>Points</td><td>3</td><td>Points</td><td>5</td><td>Points</td><td>7.5</td></tr>
<tr><td>4</td><td>Occupational Health and Safety Officer
Accredited Certificate or Higher.</td><td>5</td><td colspan="2">5 - 9</td><td colspan="2">10 - 14</td><td colspan="2">>15</td></tr>
</table></td><td>30</td><td>20</td></tr>
</table>

		Experience in construction projects		Points	3	Points	5	Points	7.5		
3	**Plant and Equipment** **N.B: Tenderers to submit vehicle/equipment ownership proof or a letter of intent to hire from a service provider (plant hire) or lease of agreement: non-submission will result in loss of points.**									**40**	**20**

TARGETED GOALS	TENDERED GOAL	POINTS AWARDED CONTRACTOR
1 TLB	5	
1 20 ton (minimum) Excavator	10	
1 Tipper truck	10	
1 Water truck (minimum 6000lt)	5	
1 Grader	10	

Please Note:

- Maximum points = 100
- Tenderers/PSP's scoring less than 60 will not meet the functionality criterion.
- Reference checks will be done to determine whether projects were successfully carried out.
- The minimum threshold for a final score is therefore 60.

Stage 3: Financial Offer and Preference Evaluation

Each Bid will be evaluated in terms of price and preference in accordance with the Preferential Procurement Regulations 2022 (Government Gazette Volume. 689 4 November Number. 47452 2022).

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

POINTS AWARDED FOR PRICE

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

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

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

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmax = Price of highest acceptable tender

POINTS AWARDED FOR SPECIFIC GOALS

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:

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.)

A	**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)**
Within the boundaries of Free State		4		
Within the boundaries of Dihlabeng municipality		6		
Historically Disadvantaged Individual		10		

Points will be awarded to tenderers who are eligible for preferences in terms of Schedule MBD6.1: Preferencing Schedule (where preferences are granted in respect of B-BBEE contribution) which is included in T2.2 Returnable Schedules. The terms and conditions of Schedule MBD6.1 shall apply in all respects to the tender evaluation process and any subsequent contract.

For each work package, the Municipality will select the required items from the Bill of Quantities and the highest scoring tenderer (on price for selected items and on BEEE points claimed) will be award the individual assignment. For major work assignments over R1 million, bidders are to submit proposed key staff information (e.g. CV's, qualifications and experience) related to the scope of works to the Municipality for approval.

Stage 4: Risk Analysis

In addition to the evaluation of Responsiveness, Functionality and Financial Offer, a risk analysis will be performed on the bidders having the highest ranking/number of points to ascertain if any of the following, as relevant, present an unacceptable commercial risk to the employer in terms of:

1. The bid of any bidder may be disregarded if that bidder, or any of its directors have –
   (a) Abused the institution's supply chain management system;
   (b) Committed fraud or any other improper conduct in relation to such system;
   (c) Failed to perform on any previous contract.

2. The bidder or any of its directors listed on the National Treasury's Database of Restricted Suppliers as companies or persons 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 Accounting Officer/Authority of the institution that imposed the restriction after the *audi alteram partem* rule was applied.

   The Database of Restricted Suppliers is available on the National Treasury's website (www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.

3. Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)?
The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.

(a) Was the bidder or any of its directors convicted by a court of law (including a court outside of the Republic of South Africa) for fraud or corruption during the past five years?
(b) Was any contract between the bidder and any organ of state terminated during the past five years on account of failure to perform on or comply with the contract?

This tender is and shall be implemented in accordance with all relevant and applicable legislation, which includes and are not limited to best practice guidelines of procurement, Construction Industry Development Board Regulations, Tender Data and Contract Data, GCC for Construction Works, and etc.

C3.12 Proof of Insurance and Guarantees are not required at tender stage. The service provider must provide proof that the necessary Insurance and Guarantees are in place when being considered for a works package. The Insured amount will depend on the requirements of a works package.

C3.13 **Acceptance of tender offer**

Add the following to C.3.13:

C.3.13.1 Tender offers will only be accepted if:

a) the tenderer is registered and in good standing with the South African Revenue Service (SARS) and has submitted evidence in the form of an **original** valid Tax Clearance Certificate issued by SARS (Returnable Schedule 3);
b) the tenderer or any of its directors is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act, 12 of 2004 as a person prohibited from doing business with the public sector;
c) the tenderer has not:
   i) abused the Employer's Supply Chain Management System; or
   ii) failed to pay municipal rates and taxes or service charges and such rates, taxes and charges are in arrears for more than three months;
   iii) failed to perform on any previous contract and has been given a written notice to this effect
d) the tenderer has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the Employer or potentially compromise the tender process.

C.3.15 *Replace Clause C.3.15 with the following:*

C.3.15.1 Disputes, objections, complaints and queries

In terms of Regulations 49 and 50 of the Local Government: Municipal Finance Management Act, 56 of 2003 – Municipal Supply Chain Management Regulations (Board Notice 868 of 2005):

a) Persons aggrieved by decisions or actions taken by the Dihlabeng Local Municipality in the implementation of its supply chain management system, may lodge within 14 days of the decision or action, a written objection or complaint or query or dispute against the decision or action.
b) Objections, complaints, queries and disputes must be submitted in writing to the Municipal Manager, Dihlabeng Local Municipality, PO Box 551, Bethlehem 9700.

C.3.15.2 Appeals

a) In terms of Section 62 of the Local Government: Municipal Systems Act, 32 of 2000 a person whose rights are affected by a decision taken by the Dihlabeng Local Municipality in the implementation of its supply chain management system, may appeal against that decision by giving written notice of the appeal and reasons to the Dihlabeng Local Municipality Manager within 21 days of the date of the notification of the decision.
b) An appeal must contain the following:
   i) Reasons and/or grounds for the appeal
   ii) The way in which the appellants rights have been affected
   iii) Remedy sought by appellant

c) Appeals must be submitted in writing to the Municipal Manager, Dihlabeng Local Municipality, PO Box 551, Bethlehem 9700.

C.3.15.3 Right to approach the courts and rights in terms of Promotion of Administrative Justice Act, 3 of 2000 and Promotion of Access to Information Act, 2 of 2000

Clauses F.3.13.2 and F.3.13.3 do not influence any affected person's rights to approach the High Court at any time or its rights in terms of the Promotion of Administrative Justice Act and Promotion of Access to Information Act.

a) All legal process and pleadings must be served on the Municipal Manager, Dihlabeng Local Municipality, PO Box 551, Bethlehem 9700.
b) All requests in terms of PAJA and PAIA must be submitted in writing to the Municipal Manager, Dihlabeng Local Municipality, PO Box 551, Bethlehem 9700.

C.3.16 Add the following to C.3.16.1:

C.3.16.1 Before accepting the tender of the successful tenderer the Employer shall notify the successful tenderer in writing of the decision of the Employer's Bid Adjudication Committee to award the tender to the successful tenderer. No rights shall accrue to the successful tenderer in terms of this notice, and only once the processes described in F.3.13.2 and F.3.13.3 above have been completed can the Employer sign the Acceptance part of the Form of Offer and Acceptance.

Replace sub-clause F.3.16.2 with the following:

C.3.16.2 The Employer shall, at the same time as notifying the successful tenderer of the Bid Adjudication Committee's decision to award the tender to the successful tenderer, also give written notice to the other tenderers informing them that they have been unsuccessful.

The additional conditions of tender are:

C.4.1 Compliance with Occupational Health and Safety Act, 85 of 1993

Tenderers are to note the requirements of the Occupational Health and Safety Act, 85 of 1993 and the Construction Regulations, 2014 issued in terms of Section 43 of the Act. The Tenderer shall be deemed to have read and fully understood the requirements of the above Act and Regulations and to have allowed for all costs in compliance therewith.

C.4.2 Claims arising after submission of tender

No claim for any extras arising out of any doubt or obscurity as to the true intent and meaning of anything shown on the Contract Drawings or contained in the Conditions of Contract, Scope of Work and Pricing Data, will be admitted by the Employer/Employer's Agent after the submission of any tender and the Tenderer shall be deemed to have:

1) inspected the Contract Drawings and read and fully understood the Conditions of Contract.
2) read and fully understood the whole text of the Scope of Work and Pricing Data and thoroughly acquainted himself with the nature of the works proposed and generally of all matters which may influence the Contract.
3) visited the site of the proposed works, carefully examined existing conditions, the means of access to the site, the conditions under which the work is to be done, and acquainted himself with any limitations or restrictions that may be imposed by the Municipal or other Authorities in regard to access and transport of materials, plant and equipment to and from the site and made the necessary provisions for any additional costs involved thereby.
4) requested the Employer or his duly authorised agent to make clear the actual requirements of anything shown on the Contract Drawings or anything contained in the Scope of Work and Pricing Data, the exact meaning or interpretation of which is not clearly intelligible to the Tenderer.
   Before submission of any tender, the Tenderer should check the number of pages, and if any are found to be missing or duplicated, or the figures or writing indistinct, or if the Pricing Data contain any obvious errors, the tenderer must apply to the Employer/Employer's Agent at once to have the same rectified, as no liability will be admitted by the Employer/Employer's Agent in respect of errors in any tender due to the foregoing.
5) received any Addenda to the tender documents which have been issued in accordance with the Employer's Supply Chain Management Policy.

C4.3 Risk Analysis

Notwithstanding compliance with regard to CIDB registration or any other requirements of the tender, the Employer will perform a risk analysis in respect of the following:

a) reasonableness of the financial offer
b) reasonableness of unit rates and prices
c) the tenderer's ability to fulfil its obligations in terms of the tender document, that is, that the tenderercan demonstrate that he/she possesses the necessary professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, capacity, experience, reputation, personnel to perform the contract, etc.; the Employer reserves the right to consider a tenderer's existing contracts with the Dihlabeng Local Municipality in this regard.

No tenderer will be recommended for an award unless the tenderer has demonstrated to the satisfaction of the Employer that he/she has the resources and skills required.

C.4.4 Invalid tenders

Tenders may be considered invalid and shall be endorsed and recorded as such in the tender opening record, by the responsible official who opened the tender, in the following circumstances:

a) if the tender offer is not submitted on the Form of Offer and Acceptance bound into this tender document (form C1.1, Part C1: Agreements and Contract Data);
b) if the tender is not completed in non-erasable ink;
c) if the offer (on the Form of Offer and Acceptance) has not been signed;

d) if the offer (on the Form of Offer and Acceptance) is signed, but the name of the tenderer is not stated or is indecipherable.

C.4.5 General supply chain management conditions applicable to tenders

In terms of its Supply Chain Management Policy the Employer may not consider a tender unless the provider who submitted the tender:

a) has furnished the Employer with that provider's:
- full name;
- identification number or company or other registration number; and
- tax reference number and VAT registration number, if any;

b) has indicated whether:
- the provider is in the service of the state, or has been in the service of the state in the previous twelve months;
- the provider is not a natural person, whether any of the directors, managers, principal shareholders or stakeholders is in the service of the state, or has been in the service of the state in the previous twelve months;
- whether a spouse, child or parent of the provider or of a director, manager, shareholder or stakeholder referred to above is in the service of the state, or has been in the service of the state in the previous twelve months; or

c) irrespective of the procurement process followed, the Employer is prohibited from making an award to:
- a person who is in the service of the state;
- a juristic entity of which any director, manager, principal shareholder or stakeholder is in the service of the state;
- an advisor or consultant contracted with the Employer, or
- a person, advisor or corporate entity involved with the bid specification committee, or a director of such corporate entity.

In this regard, tenderers shall complete Schedule 1, Part T2.2: Returnable Schedules: Compulsory Enterprise Questionnaire. Failure to complete this Schedule may result in the tender not being considered.

C.4.6 Combating abuse of the Supply Chain Management Policy

In terms of the Municipality's Supply Chain Management Policy, the Employer may reject the tender of any tenderer if that tenderer or any of its directors has:

a) 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;

b) failed during the last five years, to perform satisfactorily on a previous contract with the Municipality or any other organ of state after written notice was given to that tenderer that performance was unsatisfactory;

c) abused the supply chain management system of the Employer or has committed any improper conduct in relation to this system;

d) been convicted of fraud or corruption during the past five years;

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

f) been listed with the Register of 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 or juristic entity prohibited from doing business with the public sector.

In this regard, tenderers shall complete Schedule 4, Part T2.2: Returnable Schedules: Declaration of Bidder's Past Supply Chain Management Practices (in terms of the Municipal Finance Management Act). Failure to complete this Schedule may result in the tender not being considered.

C.4.7 Requests for contract documents, or parts thereof, in electronic format

The Employer shall not formally issue tender documents in electronic format as contemplated in F.2.13.2 and F.2.13.3 and shall only issue tender documents in hardcopy. An electronic version of the issued tender documents may be made available to the tenderer, upon written request in terms of this clause, subject to the following:

(a) Electronic copies of the issued tender documents, or parts thereof, will only be provided to tenderers who have been issued with the tender documents as contemplated in F.1.2 in hardcopy.

(b) The electronic version shall not be regarded as a substitute for the issued tender documents.

(c) The Employer shall not accept tenders submitted in electronic format. Only those tenders that have been completed on the issued hard copy tender document shall be considered, with the exception that printed Bills of Quantities, in the same format (that is, layout, billed items and quantities) as those issued electronically by the Employer, may be submitted with the tender as stated in F.2.13.2. Where Addenda

have been issued which amend the Bills of Quantities, then the printed Bills of Quantities shall take these into account. The pages of the issued Bills of Quantities should not be removed from the tender document.

(d) The Employer accepts no responsibility or liability arising from any reliance on or use of the electronic version provided in terms of this clause. The Employer further does not guarantee that the electronic version corresponds with the issued tender documents in all respects. Tenderers are alerted to the fact that electronic versions of the tender documents may not reflect any notices or addenda that amend the tender document.

(e) Any non-compliance with these provisions, including effecting any unauthorised alterations to the tender documents as contemplated in F.2.11, shall render the tender non-responsive. The Employer reserves the right to take any action against such tenderer allowed in law including, in circumstances where the tender had already been awarded, the right to cancel the contract.

(f) In requesting the electronic version of the tender documents or parts thereof, the tenderer is deemed to have read, understood and accepted all of the above conditions.

C.4.8 **Bidders who do not submit B-BBEE Status Level Verification Certificates or are non-compliant contributors to B-BBEE do not qualify for preference points for BBBEE** will not be disqualified from the bidding process. They will score points out of 80 for price only and zero (0) points out of 20 for BBBEE.

A trust, consortium or joint venture must submit a consolidated B-BBEE Status Level Verification Certificate for every separate bid.

C.4.9 Rates and Pricing

The rates and / or prices submitted and stated in the Pricing Data shall be final and binding throughout the period of the Contract. Where the tenderer has stipulated conditions tied to a submitted rate, the rate will be deemed null and void.

a) Only tenderers, whose CIDB grading is in line with the value of the Work Assignment / Package, will beconsidered for appointment of a Work Assignment / Package.
b) Tenderers cannot be considered for a Work Assignment / Package where rates have not been submitted for items that are included in the bill of quantities of a Work Assignment / Package.
c) The Municipality would endeavour to achieve a degree of equity among the listed tenderers.
d) The Municipality reserves the right not to successively appoint the same tenderer, however, the Municipality will ensure that value for money principals (economy, effectiveness and efficiency) are achieved, when making appointments for Work Assignment / Packages.
e) Work Assignment / Packages cannot be awarded, or the awarded civil works assignments would be cancelled, should the tenderer not comply with the following:

- Submit to Municipality, all required Guarantees and Insurances, within 7 days of being requested to do so.
- Submit to the Municipality, within 3 days, written confirmation that the tenderer has the ability to carry out the works:
- within the timeframe required by the Municipality,
- utilizing the proper materials and work method, as specified in the Contract Data,.
- utilizing the proper work methods, as specified in the Contract Data

f) Tenderers are to note that the Contractor is required to ensure that all sub-contractors or others engaged in the performance of the contract also comply with tender and contract requirements.

g) Tenderers are to note that the Municipality reserves the right not to make use this tender, where it is and where it is apparent that a successful service provider's rate(s) are not in line with market related prices.

h) Tenderers are to note that work will be executed in such a manner as to maximise the use of labour-intensive construction methods in order to provide unskilled employment opportunities. For certain works a Community Liaison Officer (CLO) may be required and can be appointed by the Contractor. The primary functions of the CLO shall be to assist the contractor with the selection and recruitment of targeted labour, to represent the local community in matters concerning the use of targeted labour (and/or enterprises) on the works, and to assist with and facilitate communication between the Contractor, the Engineer and the local communities.

C.4.10 Unbundling of Municipal Infrastructure Assets

As part of the project close-out, the contractor must also unbundle the assets. The unbundling of capital assets means breaking down the capital assets into components according to the capital asset hierarchy as per GRAP 17 (PPE) in support of the annual compilation of a GRAP compliant Fixed Asset Register. In dealing with the unbundling of capital assets, the unbundling must occur at the end of every financial year and the end of the project. See Part C3: SCOPE OF WORKS, item no.C3.1.10 for more details.

DIHLABENG LOCAL MUNICIPALITY

Part T2: Returnable Documents

Pages

T2.1: LIST OF RETURNABLE DOCUMENTS

The tenderer must complete the following Returnable Documents in non-erasable **black ink**:

1. Returnable Schedules Required for Tender Evaluation Purposes

SCHEDULE 1: COMPULSORY ENTERPRISE QUESTIONNAIRE
SCHEDULE 2: AUTHORITY TO SIGN BID
SCHEDULE 3: DECLARATION OF INTEREST (**MBD 4**)
SCHEDULE 4: CERTIFICATE OF INDEPENDENT BID DETERMINATION (**MBD 9**
SCHEDULE 5: CERTIFICATE OF AUTHORITY FOR JOINT VENTURES
SCHEDULE 6: DECLARATION OF TENDERER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES (**MBD 8**)
SCHEDULE 7: CERTIFICATE FOR PAYMENT OF MUNICIPAL SERVICES (**MBD 10**)
SCHEDULE 8: FUNCTIONALITY ASSESSMENT 1
SCHEDULE 9: FUNCTIONALITY ASSESSMENT 2
SCHEDULE10: COMPULSORY SITE VISIT/CLARIFICATION MEETING CERTIFICATE OF ATTENDANCE

2. Other documents required for tender evaluation purposes

a) Joint Venture Agreement (if applicable) - append to Schedule 5.

3. Returnable Schedules that will be incorporated into the Contract

SCHEDULE 12: AUTHORISATION FOR THE DEDUCTION OF OUTSTANDING AMOUNTS OWED TO THE DIHLABENG LOCAL MUNICIPALITY
SCHEDULE 13: RECORD OF ADDENDA TO TENDER DOCUMENTS
SCHEDULE 14: PREFERENCING SCHEDULE (**MBD 6.1**) **This form must be duly completed and signed? Is a CERTIFIED copy of the BBBEE certificate issued by a Verification Agency accredited by SANAS or the original Sworn Affidavit attached?**
SCHEDULE 15: CERTIFICATE OF REGISTRATION WITH CIDB
SCHEDULE 16: DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (VAT INCLUDED)(**MBD5**)
SCHEDULE 17: LETTER OF GOOD STANDING FROM COMPENSATION COMMISSIONER OR LICENSED COMPENSATION INSURER.

4. C1.1 The offer portion of the C1.1 Form of Offer and Acceptance

5. C1.2 Contract Data (Part 2)

6. C2.2 Bills of Quantities

DIHLABENG LOCAL MUNICIPALITY

T2.2 RETURNABLE SCHEDULES

NOTES:

Wherever the term ‘bid’ is used, it shall mean ‘tender’ or ‘tender offer’.
Wherever the term ‘bidder’ is used, it shall mean ‘tenderer’ or ‘tendering entity’.
Wherever the term ‘bidding’ is used, it shall mean ‘tendering’.

SCHEDULE 1

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: .....

Address of enterprise: .....

.....

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

Section 3: CIDB registration number, CRS number: .....

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 of service of the state

Refer to Schedule 2

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

Refer to Schedule 2

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 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;

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 ON BEHALF OF TENDERER: .....

SCHEDULE 2: AUTHORITY TO SIGN A BID

1. SOLE PROPRIETOR (SINGLE OWNER BUSINESS) AND NATURAL PERSON

1.1. I,_____, the undersigned, hereby confirm that I am the sole owner of the business trading as_____.

OR

1.2. I,_____, the undersigned, hereby confirm that I am submitting this tender in my capacity as natural person.

SIGNATURE:		DATE:	
PRINT NAME:			
WITNESS 1:		WITNESS 2:	

2. COMPANIES AND CLOSE CORPORATIONS

2.1. **If a Bidder is a COMPANY**, **a certified copy of the resolution by the board of directors**, duly signed, authorising the person who signs this bid to do so, as well as to sign any contract resulting from this bid and any other documents and correspondence in connection with this bid and/or contract on behalf of the company **must be submitted with this bid,** that is, before the closing time and date of thebid

2.2. In the case of a **CLOSE CORPORATION (CC**) submitting a bid**, a resolution by its members**, authorizing a member or other official of the corporation to sign the documents on their behalf, **shall be included with the bid.**

PARTICULARS OF RESOLUTION BY BOARD OF DIRECTORS OF THE COMPANY/MEMBERS OF THE CC

Date Resolution was taken			
Resolution signed by (name and surname)			
Capacity			
Name and surname of delegated Authorised Signatory			
Capacity			
Specimen Signature			
Full name and surname of ALL Director(s) / Member (s)			
1.		2.	
3.		4.	
5.		6.	
7.		8.	
9.		10.	

Is a CERTIFIED COPY of the resolution attached?			**YES**		**NO**
SIGNED ON BEHALF OF COMPANY / CC:		DATE:			
PRINT NAME:					
WITNESS 1:		WITNESS 2:			

SCHEDULE 3

DECLARATION OF INTEREST (MBD 4)

1. No bid will be accepted from persons in the service of the state[1].

2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the bidder 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 bid.

3.1 Full Name of bidder or his or her representative: .....

3.2 Identity Number: .....

3.3 Position occupied in the Company (director, trustee, shareholder[2]): .....

3.4 Company Registration Number: .....

3.5 Tax Reference Number: .....

3.6 VAT Registration Number: .....

3.7 The names of all directors / trustees / shareholders members, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below.

3.8 Are you presently in the service of the state?[1] **YES / NO**

3.8.1 If so, furnish particulars.

.....

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

3.9.1 If so, furnish particulars.

.....

[1] MSCM Regulations: "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 the national Council of provinces;
(b) a member of the 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.1 of 1999);
(e) an executive member of the accounting authority of any national or provincial public entity; or
(f) an employee of Parliament or a provincial legislature.

[2] Shareholder" means a person who owns shares in the company and is actively involved in the management of the company or business and exercise control over the company.

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

3.10.1 If so, furnish particulars.

.....

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

3.11.1 If so, furnish particulars.

.....

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

3.12.1 If so, furnish particulars.

.....

3.13 Are any spouse, child or parent of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state? **YES / NO**

3.13.1 If so, furnish particulars.

.....

.....

3.14 Do you or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company have any interest in any other related companies or business whether or not they are bidding for this contract? **YES / NO**

3.14.1 If so, furnish particulars.

.....

4. Full details of director / trustees / members / shareholders.

Full name	Identity Number	State Employee Number

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

....
Capacity Name of Bidder

DIHLABENG LOCAL MUNICIPALITY

SCHEDULE 4

CERTIFICATE OF INDEPENDENT BID DETERMINATION (MBD 9)

1. This Municipal Bidding Document (MBD) must form part of all bids 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 bidding (or bid rigging)[1]. Collusive bidding is a per 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:
   3.1. take all reasonable steps to prevent such abuse;

   3.2. reject the bid of any bidder if that bidder 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

   3.3. cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding 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 bids are considered, reasonable steps are taken to prevent any form of bid-rigging.

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

CERTIFICATE OF INDEPENDENT BID DETERMINATION:
In response to the invitation for the bid made by:

DIHLABENG LOCAL MUNICIPALITY

I, the undersigned, in submitting the accompanying bid, hereby make the following statements that I certify to be true and complete in every respect:

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

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

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

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

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

[1] *Bid rigging (or collusive bidding) 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 bidding process. Bid rigging is, therefore, an agreement between competitors not to compete.*

5.1. has been requested to submit a bid in response to this bid invitation;
5.2. could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
5.3. provides the same goods and services as the bidder and/or is in the same line of business as the bidder

6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium will not be construed as collusive bidding.

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

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 bid invitation relates.

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

10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids 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**
.....	.....
Capacity	**Name (print)**
.....	
Name of firm	

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

DIHLABENG LOCAL MUNICIPALITY

SCHEDULE 5

CERTIFICATE OF AUTHORITY FOR JOINT VENTURES

This returnable schedule is to be completed by joint ventures.

We, the undersigned, are submitting this tender offer in joint venture and hereby authorize

Mr/Ms .....

.....authorised signatory of the company,

close corporation or partnership .....

..... , acting in the capacity of lead partner, to sign all documents in connection with the tender offer and any contract resulting from it on our behalf.

NAME OF FIRM	ADDRESS	DULY AUTORISED SIGNATORY
Lead partner		Signature…….. Name…… Designation……..
		Signature…….. Name…… Designation……..
		Signature…….. Name…… Designation……..
		Signature…….. Name…… Designation……..

Note:

A copy of the Joint Venture Agreement, showing clearly the **percentage contribution of each partner** to the joint venture, shall be appended to this schedule.

DIHLABENG LOCAL MUNICIPALITY

SCHEDULE 6

DECLARATION OF TENDERER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES (MBD 8)

1 This Municipal Bidding Document must form part of all bids 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 taken to combat the abuse of the supply chain management system.

3 The bid of any bidder may be rejected if that bidder, or any of its directors have:

a. abused the municipality's / municipal entity'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 on or failed to comply with any government, municipal or other 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 Corrupt 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 bid.

Item	Question	Yes	No
4.1	Is the bidder 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 Accounting Officer/Authority of the institution that imposed the restriction after the *audi alteram partem* rule was applied). The Database of Restricted Suppliers now resides on the National Treasury's website (www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.	Yes ☐	No ☐
4.1.1	If so, furnish particulars:		
4.2	Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)? The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.	Yes ☐	No ☐
4.2.1	If so, furnish particulars:		
4.3	Was the bidder 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?	Yes ☐	No ☐
4.3.1	If so, furnish particulars:		

Item	Question	Yes	No
4.4	Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	Yes ☐	No ☐
4.4.1	If so, furnish particulars:		
4.5	Was any contract between the bidder 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?	Yes ☐	No ☐
4.5.1	If so, furnish particulars:		

CERTIFICATION

I, THE UNDERSIGNED (FULL NAME) ……..…….…… CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS 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 Bidder

DIHLABENG LOCAL MUNICIPALITY

SCHEDULE 7

CERTIFICATE FOR PAYMENT OF MUNICPAL SERVICES (MBD 10)

DECLARATION IN TERMS OF CLAUSE 112(1) OF THE MUNICIPAL FINANCE MANAGEMENT ACT (NO.56 OF 2003)
- (To be signed in the presence of a Commissioner of Oaths)

I,_____,_____(full name and ID no.), hereby acknowledge that according to SCM Regulation 38(1) (d) (i), the Municipality may reject the tender of the tenderer if any municipal rates and taxes or municipal service charges owed by the Tenderer or any of its directors/members/partners to the Dihlabeng Local Municipality, or to any other municipality or municipal entity, are in arrears for more than 3 (three) months.

I declare that I am duly authorised to act on behalf of_____(name of the firm) and hereby declare, that to the best of my personal knowledge, neither the firm nor any director/member/partner of said firm is in arrears on any of its municipal accounts with any municipality in the Republic of South Africa, for a period longer than 3 (three) months.

I further hereby certify that the information set out in this schedule and/or attachment(s) hereto is true and correct. The Tenderer acknowledges that failure to properly and truthfully complete this schedule may result in the tender being disqualified, and/or in the event that the tenderer is successful, the cancellation of the contract.

PHYSICAL BUSINESS ADDRESS(ES) OF THE TENDERER	MUNICIPAL ACCOUNT NUMBER

FURTHER DETAILS OF THE BIDDER'S Director / Shareholder / Partners, etc.:

Director / Shareholder / partner	Physical address of the Business	Municipal Account number(s)	Physical residential address of the Director / shareholder / partner	Municipal Account number(s)

Please attach certified copy (ies) of ID document(s) and Municipal Accounts If the entity or any of its Directors/Shareholders/Partners, etc. rents/leases premises, a copy of the rental/lease agreement must be submitted with this tender.

Signature	**Position**	**Date**

COMMISSIONER OF OATHS	**Apply official stamp of authority on this page:**
Signed and sworn to before me at _, on this_____day of____20_____ by the Deponent, who has acknowledged that he/she knows and understands the contents of this Affidavit, it is true and correct to the best of his/her knowledge and that he/she has no objection to taking the prescribed oath, and that the prescribed oath will be binding on his/her conscience. **COMMISSIONER OF OATHS:-** Position:_____ Address: _____ Tel: _____	

DIHLABENG LOCAL MUNICIPALITY

SCHEDULE 8 - FUNCTIONALITY SHEET 1

ORGANISATIONAL STRUCTURE, PLANT AND EQUIPMENT LIST, CONTRACTORS EXPERIENCE,

Tenderers must attach to this page sufficient information in order to qualify for the points in respect of quality, the following information is required:

(a) Background / Organisation / Management / Years in practice.
(b) Fields of activity / expertise
(c) Staffing: The contractor must provide an organizational chart, listing the number and composition of the teams depicting number of workers in each team.
(d) The roles and responsibilities, of each key staff member should be set out as job descriptions
(e) The contractor should also list available plant and machinery. Where a tenderer does not own plant or machinery confirmation of availability must be provided for plant/machinery that will be hired.
(f) In the case of an association / joint venture / consortium, it should, indicate how the duties and responsibilities are to be shared.

The tender shall indicate on the schedule below all relevant projects that have been completed in their local office with completion dates in the past five years, or that are underway at present specifically. A brief description (less than 200 words) for each project listed in the table below must be appended to this schedule. Contact details for references must be provided.

CIDB GRADING: .....CONTRACTORS EXPERIENCE:

TITLE	CONTRACT VALUE (VAT INCLUDED)	DURATION (FROM-TO)	DISCRIPTION OF WORKS	CLIENT	CONTACT REFERENCE AND PHONE NO

Signed on behalf of Tenderer: .....

DIHLABENG LOCAL MUNICIPALITY

SCHEDULE 9 - FUNCTIONALITY SHEET 2

CONTRACTOR'S KEY PERSONNEL

This criteria relates to the education, training and experience of the key staff members / experts, in the civil engineering infrastructure fields, including both construction and maintenance. CV and certified qualifications and training certificates must be attached.

CIDB GRADING:……...

PROJECT MANAGERS , SITE AGENTS AND FOREMEN				
NAME	JOB TITLE	QUALIFICATIONS	TRAINING	NO OF YEARS RELEVANT EXPERIENCE

Attach additional pages if mores space is required

SUPERVISORS, ARTISANS AND OTHER SKILLED STAFF				
NAME	JOB TITLE	QUALIFICATIONS	TRAINING	NO OF YEARS RELEVANT EXPERIENCE

Attach additional pages if mores space is required

Signed on behalf of Tenderer: .....

DIHLABENG LOCAL MUNICIPALITY

SCHEDULE 10

COMPULSORY SITE VISIT/CLARIFICATION MEETING – CERTIFICATE OF ATTENDANCE (N/A)

I / We*, the undersigned, certify that I / we* have familiarized ourselves with the requirements of this tender as discussed at the virtual meeting for which I / we* am / are* submitting this Tender and have, as far as practicable, familiarized myself / ourselves* with all information, risks, contingencies and other circumstances which may influence or affect my / our* tender

Name and surname : .....

Capacity : .....

Name of firm : .....

Address : .....

.....

.....

Telephone no : ..... Fax no : .....

Date : .....

SIGNED ON BEHALF OF TENDERER : .....

By having this certificate signed by the Employer's Agent, it is certified that the Tenderer attended the compulsory site visit/clarification meeting at the details stated in Part T.1 Tender Notice and Invitation to Tender.

Date : .....

Name and surname : .....

SIGNED : EMPLOYER OR EMPLOYER'S AGENT ..... :

DIHLABENG LOCAL MUNICIPALITY

SCHEDULE 10

AUTHORISATION FOR THE DEDUCTION OF OUTSTANDING AMOUNTS OWED TO THE DIHLABENG LOCAL MUNICIPALITY

To: **THE MUNICIPAL MANAGER, DIHLABENG LOCAL MUNICIPALITY**

From: _____

(Name of Tenderer)

AUTHORISATION FOR THE DEDUCTION OF OUTSTANDING AMOUNTS OWED TO THE DIHLABENG LOCAL MUNICIPALITY

The Tenderer:

a) hereby acknowledges that according to SCM Regulation 38(1)(d)(i) the Municipal Manager may reject the tender of the Tenderer if any municipal rates and taxes or municipal service charges owed by the Tenderer or any of its directors/members/partners to the Dihlabeng Local Municipality, or to any other municipality or municipal entity, are in arrears for more than 3 (three) months; and

b) therefore hereby agrees and authorises the Dihlabeng Local Municipality to deduct the full amount outstanding by the Tenderer or any of its directors/members/partners from any payment due to the Tenderer.

I, _____, the undersigned,

(full name in block letters)

hereby authorise the Dihlabeng Loca Municipality to deduct the full amount outstanding by the Tenderer/Contractor or any of its directors/members/partners from any payment due to the Tenderer/Contractor.

_____

Signature

THUS DONE AND SIGNED for and on behalf of the Tenderer/Contractor

at …….... on the..... day of ……..……...20…….

(PLACE) (DAY) (MONTH) (YEAR)

DIHLABENG LOCAL MUNICIPALITY

SCHEDULE 10

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:

	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Attach additional pages if more space is required.

SIGNED ON BEHALF OF TENDERER: .....

DIHLABENG LOCAL MUNICIPALITY

SCHEDULE 11

PREFERENCING SCHEDULE (MBD 6.1)

Preference points claim form in terms of the Preferential ProcurementRegulations 2022

This preference form must form part of all bids invited. It contains general information and serves as a claim form for preference points for Broad-Based Black Economic Empowerment (B-BBEE) Status Level of Contribution.

NB: BEFORE COMPLETING THIS FORM, BIDDERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF B-BBEE, AS PRESCRIBED IN THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022.

1 GENERAL CONDITIONS

1.1 The following preference point systems are applicable to all bids:
- 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 The value of this bid is estimated to not exceed R50 000 000 (all applicable taxes included) and therefore the 80/20 system shall be applicable.

1.3 Preference points for this bid shall be awarded for:
(a) Price; and
(b) B-BBEE Status Level of Contribution.

1.3.1 The maximum points for this bid are allocated as follows:

	POINTS
1.3.1.1 PRICE	…80…..
1.3.1.2 B-BBEE STATUS LEVEL OF CONTRIBUTION	…20…...
Total points for Price and B-BBEE must not exceed	**100**

1.4 Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor together with the bid will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.

1.5. The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

2 DEFINITIONS

2.1 "**B-BBEE**" means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;

2.2 "**B-BBEE status level of contributor**" means the B-BBEE status of an entity in terms of a code of good practice on black economic empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;

2.3 "**bid**" means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the provision of goods or services, through price quotations, advertised competitive bidding processes or proposals;

2.4 "**Broad-Based Black Economic Empowerment Act**" means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003); as amended by Act No. 46 of 2013; (this was added by us);

2.5 "**EME**" means an Exempted Micro Enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;

2.6 "**functionality**" means the ability of a tenderer to provide goods or services in accordance with specifications as set out in the tender documents.

2.7 "**prices**" includes all applicable taxes less all unconditional discounts;

2.8 "**proof of B-BBEE status level of contributor**" means:

2.8.1 B-BBEE Status level certificate issued by an authorized body or person;

2.8.2 A sworn affidavit as prescribed by the B-BBEE Codes of Good Practice;

2.8.3 Any other requirement prescribed in terms of the B-BBEE Act;

2.9 "**QSE**" means a qualifying small business enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;

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

3. POINTS AWARDED FOR PRICE

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

Each Bid will be evaluated in terms of price and preference in accordance with the Preferential Procurement Regulations 2022 (Government Gazette Volume. 689 4 November Number. 47452 2022).

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

POINTS AWARDED FOR PRICE

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

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

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

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmax = Price of highest acceptable tender

POINTS AWARDED FOR SPECIFIC GOALS

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:

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—

(c) 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

(d) 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.*)**

	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)**
Within the boundaries of Free State		4		
Within the boundaries of Dihlabeng municipality		6		
Historically Disadvantaged Individual		10		

4. BID DECLARATION

4.1 Bidders who claim points in respect of B-BBEE Status Level of Contribution must complete the following:

5. B-BBEE STATUS LEVEL OF CONTRIBUTION CLAIMED IN TERMS OF PARAGRAPHS 1.3.1.2 AND 5.1

5.1 B-BBEE Status Level of Contribution: ……. =.....(maximum of 10 points)

(Points claimed in respect of paragraph 7.1 must be in accordance with the table reflected in paragraph 4.1 and must be substantiated by means of a B-BBEE certificate issued by a Verification Agency accredited by SANAS or a sworn affidavit.).

6. SUB-CONTRACTING

6.1 Will any portion of the contract be sub-contracted? **YES / NO**
(delete which is not applicable)

6.1.1 If yes, indicate:

(i) what percentage of the contract will be subcontracted?..... %

(ii) the name of the sub-contractor? .....

(iii) the B-BBEE status level of the sub-contractor? .....

(iv) whether the sub-contractor is an EME? **YES / NO**
(delete which is not applicable)

6.1.2 Specify, by ticking the appropriate box, if subcontracting with an enterprise in terms of Preferential Procurement Regulations, 2017:

Designated Group: An EME or QSE which is at least 51% owned by:	**EME** √	**QSE** √
Black people		
Black people who are youth		
Black people who are women		
Black people with disabilities		
Black people living in rural or underdeveloped areas or townships		
Cooperative owned by black people		
Black people who are military veterans		
OR		
Any EME		
Any QSE		

7. DECLARATION WITH REGARD TO COMPANY/FIRM

7.1 Name of company: .....

7.2 VAT registration number: .....

7.3 Company registration number: .....

7.4 TYPE OF COMPANY/ FIRM

☐ Partnership/Joint Venture / Consortium
☐ One person business/sole propriety
☐ Close corporation
☐ Company
☐ (Pty) Limited
[TICK APPLICABLE BOX]

7.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

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

7.6 COMPANY CLASSIFICATION

☐ Manufacturer
☐ Supplier
☐ Professional service provider
☐ Other service providers, e.g. transporter, etc.
[TICK APPLICABLE BOX]

7.7 MUNICIPAL INFORMATION

Municipality where business is situated.....
Registered Account Number .....
Stand Number .....

7.8 TOTAL NUMBER OF YEARS THE COMPANY/FIRM HAS BEEN IN BUSINESS? .....

7.9 I / we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the B-BBEE status level of contribution indicated in paragraph 1.4 and 6.1 of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

The information furnished is true and correct;

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

In the event of a contract being awarded as a result of points claimed as shown in paragraph 1.4 and 6.1, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;

7.10 If the B-BBEE status level of contribution has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –

7.10.1 disqualify the person from the bidding process;

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

7.10.3 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;

7.10.4 restrict the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, from obtaining business from any organ of state for aperiod not exceeding 10 years, after the audi alteram partem (hear the other side) rule hasbeen applied; and

7.10.5 forward the matter for criminal prosecution.

WITNESSES:

1. .....

1. .....

.....
SIGNATURE(S) OF BIDDER(S)

DATE .....

ADDRESS .....

.....

.....

.....

DIHLABENG LOCAL MUNICIPALITY

SCHEDULE 12: CERTIFICATE OF REGISTRATION WITH CIDB

CIDB Contractor Registration Certificate

A Certificate of Contractors Registration issued by the Construction Industry Development Board (CIDB) shall be attached to this schedule.

Where a tenderer satisfies CIDB Contractor Grading designation requirements through joint venture formation, such tenderers must submit the Certificates of Contractor Registration in respect of each partner.

Number of sheets appended by the tenderer to this schedule (If nil, enter NIL)	

SIGNATURE		NAME (PRINT)	
CAPACITY		DATE	
NAME OF FIRM			

NB: Please note that no latecomers will be allowed.

For all compulsory briefing sessions/site meetings/clarification meetings, bids received from interested bidders that did not attend the meeting or arrived later than predetermined date and time, will be ***disqualified***

DIHLABENG LOCAL MUNICIPALITY

SCHEDULE 13: – DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (VAT INCLUDED) (MBD5)

For all procurement (WORK ASSIGNMENTS) expected to exceed R10 million (VAT included), biddersmust complete the following questionnaire:

1. Are you by law required to prepare annual financial statements for auditing?	**YES**		**NO**	
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 a municipality or any other service provider in respect of which payment is overdue for more than 30 days?	**YES**		**NO**	
2.1. If no, this serves to certify that the bidder has no undisputed commitments for municipal services towards a municipality or other service provider in respect of which payment is overdue for more than 30 days. 2.2. If yes, provide particulars.				
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	
NAME (PRINT)			
CAPACITY			
NAME OF FIRM			

DIHLABENG LOCAL MUNICIPALITY

SCHEDULE 14: – COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT, 1993 (ACT 130 OF 1993)

COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT, 1993 (ACT 130 OF 1993)	
Dihlabeng Local Municipality has legal duty in terms of Section 89 of the said Act to ensure that all contractors with whom agreements are entered into for the execution of work are registered as employers in accordance with the provisions of this Act and that all the necessary assessments have been paid by the contractor. In order to enter into this agreement, the following information is needed regarding the above-mentioned:	
Contractor's registration number with the office of the Compensation Commissioner:	
NOTE: **A copy of the latest receipt together with a copy of the relevant assessment OR a copy of a valid Letter of Good Standing must be handed in, in this regard.**	

PRINT NAME:			
CAPACITY:		Name of firm	
SIGNATURE:		DATE:	

DIHLABENG LOCAL MUNICIPALITY

Part C1: Agreements and Contract Data

Pages

DIHLABENG LOCAL MUNICIPALITY

C1.1 FORM OF OFFER AND ACCEPTANCE

C1.1.1 FORM OF OFFER (*Failure to complete and sign this form will invalidate the tender*)

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract in respect of the following works:

CONTRACT NO. PW029/2023: PROVISION OF ROADS AND STORM WATER CIVIL INFRASTRUCTURE FOR A PERIOD OF THIRTY SIX (36) MONTHS FROM DATE OF APPOINTMENT

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

By the representative of the Tenderer, deemed to be duly authorised, 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 the Conditions of Contract identified in the Contract Data.

For the Tenderer:

Signature *(of person authorized to sign the tender)* : .....

Name (*of signatory in capitals*) : .....

Capacity (*of signatory*) : .....

Name of Tenderer (organisation) : .....

Address : .....

: .....

Witness:

Signature : .....

Name (*in capitals*) : .....

Date : .....

For official use.		
INITIALS OF MUNICIPAL OFFICIALS AT TENDER OPENING		
1.	**2.**	**3.**

C1.1.2 FORM OF ACCEPTANCE

This Form will be completed by the Employer

By signing this part of this Form of Offer and Acceptance, the Employer identified below 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 C1:	Agreements and Contract Data (which includes this Agreement)
Part C2:	Pricing Data
Part C3:	Scope of Work

and drawings and documents or parts thereof, which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto as listed in the Returnable 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 must be duly signed by the authorised representative(s) of both parties.

The Tenderer shall within two weeks after 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 bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data at, or just after, the date this Agreement comes into effect. Failure to fulfill any of these 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 theTenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Tenderer (now Contractor) within five days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding contract between the parties.

For the Employer:

Signature *(of person authorized to sign the acceptance)* : .....

Name (*of signatory in capitals*) : .....

Capacity (*of signatory*) : .....

Name of Employer (organisation) : DIHLABENG LOCAL MUNICIPALITY

Address : 9 Muller Street
BETHLEHEM 9701

Witness:

Signature (*of person authorized to sign the acceptance*) : .....

Name (*in capitals*) : .....

Date : .....

C1.1.3 SCHEDULE OF DEVIATIONS

This form will be completed by THE EMPLOYER and ONLY THE SUCCESSFUL TENDERER on award of a Work Assignment

Notes:

1. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
2. 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 become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.
3. 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.
4. Any change or addition to the tender documents arising from the above agreements and recorded here, shall also be incorporated into the final draft of the Contract.

1 Subject .....

Details .....

.....

.....

.....

2 Subject .....

Details .....

.....

.....

.....

3 Subject .....

Details .....

.....

.....

.....

4 Subject .....

Details .....

.....

.....

.....

By the duly authorised representatives signing this Schedule of Deviations, the Employer and the Tenderer 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 Returnable Schedules, as well as any confirmation, clarification or changes to the terms of the offer agreed by the Tenderer and the Employer during this process of offer and acceptance.

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 Tenderer of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this Agreement.

This form will be completed by THE EMPLOYER and ONLY THE SUCCESSFUL TENDERER on award of a Work Assignment

FOR THE TENDERER:

Signature : .....

Name (*in capitals*) : .....

Capacity : .....

Name and address of organisation : .....

: .....

: .....

Witness signature : .....

Witness name : .....

Date : .....

FOR THE EMPLOYER:

Signature : .....

Name (*in capitals*) : .....

Capacity : .....

Name and address of organisation : .....

: .....

: .....

Witness signature : .....

Witness name : .....

Date : .....

C1.1.4 CONFIRMATION OF RECEIPT

This form will be completed by ONLY THE SUCCESSFUL TENDERER on award of a Work Assignment

The Tenderer, (now Contractor), identified in the Offer part of this Agreement hereby confirms receipt from the Employer, identified in the Acceptance part of this Agreement, of one fully completed original copy of this Agreement, including the Schedule of Deviations (if any) today:

the ..... (day)

of ..... (month)

20 ..... (year)

at ..... (place)

FOR THE TENDERER:

Signature : .....

Name (*in capitals*) : .....

Capacity : .....

Name and address of organisation : .....

: .....

: .....

Witness signature : .....

Witness name : .....

Date : .....

DIHLABENG LOCAL MUNICIPALITY

C1.2 CONTRACT DATA

C1.2.1 CONDITIONS OF CONTRACT

C1.2.1.1 GENERAL CONDITIONS OF CONTRACT

The following standardised General Conditions of Contract:

General Conditions of Contract for Construction Works, Third Edition, 2015

Prepared by the South African Institution of Civil Engineering (SAICE) shall apply to and from the General Conditions of Contract for this contract. Copies of these conditions of contract are obtainable from the South African Institution of Civil Engineering (SAICE), Private Bag X200, Halfway House 1685, Tel: (011) 805 5947, Fax: (011) 805 5971, e-mail: civilinfo@saice.org.za.

Copies of the General Conditions of Contract are available for inspection and scrutiny at the offices of the Employer.

The General Conditions of Contract make several references to the Contract Data for specific data, which together with these conditions collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract. The Contract Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the general conditions of contract.

The General Conditions of Contract shall be read in conjunction with the variations, amendments and additions set out in the data below. Each item of data given below is cross-referenced to the clause in the General Conditions of Contract to which it mainly applies.

C1.2.2 CONTRACT SPECIFIC DATA

C1.2.2.1 PART 1: DATA TO BE PROVIDED BY THE EMPLOYER (INCLUDING SPECIAL CONDITIONS OF CONTRACT)

Ref/Clause Number	Data
1. GENERAL	
1.1.1.1	*Re-word this sub-clause as follows:* "agreed" means agreed by the Employer, or the Employer's Agent acting on behalf of the Employer, and the Contractor.
1.1.1.2	*Add the following after "Bill of Quantities":* ", also referred to as Schedule of Quantities,"
1.1.1.13	The Defects Liability Period, from the date of the issue of the Certificate of Completion, is: **Twelve (12) Months**.

DIHLABENG LOCAL MUNICIPALITY

Ref/Clause Number	Data
1.1.1.14	The time available for achieving Practical Completion, from the Commencement Date is **will be stipulated in the appointment letter of each work assignment** inclusive of: • the number of days referred to in Clause 5.3.2 below, • the number of days referred to in Clause 5.3.3, • non-working days referred to in Clause 5.8.1 below, • special non-working days referred to in Clause 5.8.1 below.
1.1.1.15	The name of the Employer is the **DIHLABENG LOCAL MUNICIPALITY**, represented by the Director: Infrastructure Services and/or such other person or persons duly authorised thereto by the Employer in writing, and is referred to in this Contract Document by the terms "Employer", "Dihlabeng Local Municipality" or "Council" as the context provides.
1.1.1.16	Add the following: In instances where a Consulting Engineer as not been appointed as the Employer's agent. The Manager Roads and Stormwater will fulfil the role as Employers's Agent.
1.1.1.26	The Pricing Strategy is by **Re-measurement Contract**.
	Add the following Clauses after Clause 1.1.1.34:
1.1.1.35	"**Drawings**" means all drawings, calculations and technical information forming part of the Contract Documents and any modifications thereof or additions thereto from time to time approved in writing by the Employer's Agent or delivered to the Contractor by the Employer's Agent.
1.1.1.36	"**Letter of Notification**" means the letters of formal notification (for placement onto the Municipalitiy's Roads and Stormwater Contractor Panel) signed by the Employer, of the decision of the Municipality's Bid Adjudication Committee sent to all tenderers. The notification of the decision does not form part of the Employer's Acceptance of the successful tenderers Offers and no rights shall accrue.
1.2.1.2	The address of the **Employer** is: Physical address: 9 Muller Street BETHLEHEM 9700 Postal address: PO Box 551 BETHLEHEM 9700 The Employer is represented by: Manager: Roads and Stormwater Mr Sefetse Thobejane Telephone: 058 303 5732 Email: sefetset@dihlabeng.com or dlmroads@gmail.com

Ref/Clause Number	Data
2. BASIS OF CONTRACT	
2.4.1	*Add the following to sub-clause 2.4.1*: "In the event of any discrepancy between a part or parts of the Contract Document, the following sections will take precedence: i. The Form of Offer and Acceptance (C1.1) ii. Schedule of Deviations (C1.1.3) iii. Contract Specific Data (C1.2.2) iv. General Conditions of Contract 2015 v. Drawings vi. Amendments to Standard Specifications (C3.4.2) vii. Standard Specifications (C3.4.1) viii. Bills of Quantities (C2.2) ix. Annexures (C4) x. Tendering Procedures and Returnable Schedules, Forms and Certificates. (T1 & T2)."
3. EMPLOYER'S AGENT	
3.2.3	Specific written approval from the Employer, is required before executing any of his functions or duties according to the following Clauses of the General Conditions of Contract or Contract Data: a) Clause 3.3.1 Nomination of Employer's Agent's Representative b) Clause 3.3.4 Employer's Agent's authority to delegate c) Clause 5.8.1 Non-working times d) Clause 5.11.1 Suspension of the Works e) Clause 5.12.4 Acceleration instead of extension of time f) Clause 6.3 Variations g) Clause 6.11 Variations exceeding 15% h) Clause 10.1.5 Employer's Agent's ruling on Contractor's claim
	Add the following Clause after Clause 3.2.4:
3.2.5	Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Employer's Agent (including absence of disapproval) shall not relieve the Contractor from any responsibility he has under the Contract, including responsibility for errors, omissions, discrepancies and non-compliances.
4. CONTRACTOR'S GENERAL OBLIGATIONS	

Ref/Clause Number	Data
4.1.2	*Add the following to Clause 4.1.2:* The Contractor shall provide the Plant and Contractor's Documents specified in the Contract, and all Contractor's Personnel, Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.
	The Works shall include any work which is necessary to satisfy the Employer's Requirements, Contractor's Proposal and Schedules, or is implied by the Contract, and all works which (although not mentioned in the Contract) are necessary for stability or for the completion, or safe and proper operation, of the Works. The Contractor shall be responsible for the adequacy, stability and safety of all Site operations and of all methods of construction and of all the Works. The Contractor shall, whenever required by the Employer's Agent, submit details of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works. No significant alteration to these arrangements and methods shall be made without this having previously been notified to the Employer's Agent."
	Add the following Clause after Clause 4.3.2:
4.3.3	The Employer and the Contractor shall enter into an agreement to complete the work required for the construction of the Works in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act, 85 of 1993 and the Construction Regulations, 2014 promulgated thereunder. Inter alia, the Contractor shall prepare and maintain a Health and Safety File in respect of the project, which shall always be available for inspection on Site and handed over to the Employer on Final Completion of the project An agreement is included in the Contract Document (Part C1.4 in Agreements and Contract Data) and shall be completed and submitted to the Employer together with a letter of good standing from the Compensation Commissioner (if not insured with a licenced compensation insurer) within fourteen (14) days after the Commencement Date. The Contractor shall ensure that any letter of good standingshall be timeously renewed in order that it remains in full force for the duration of the Contract.
4.4.1	*Add the following to Clause 4.4.1:* Any sub-contractor which contributed to the fulfilment of the required experience criteria, as part of the tender eligibility criteria, as defined under Clause F.2.1.1.3 – Part 1.2 – Tender Data, may only be replaced by sub-contractors during the Contract who have at least equal experience to those identified in Returnable Schedule 8 and 9 in Part T2.1 – Returnable Schedules, and will be subject to the approval and acceptance of the Employer.
	Add the following Clauses after Clause 4.12.3:
4.12.4	Protection of the Environment The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations. The Contractor's attention is also drawn to the Environmental Specification in the Scope of Work.

Ref/Clause Number	Data
4.12.5	As-built records The Contractor shall prepare, and keep up-to-date, a complete set of 'as-built' records of the execution of the Works, showing the exact as-built locations, sizes and details of the work as executed. These records shall be kept on the Site and shall be used exclusively for the purposes of this Clause. Two copies shall be supplied to the Employer's Agent prior to the commencement of the Tests on Completion. In addition, the Contractor shall supply to the Employer's Agent as-built drawings of the Works, showing all Works as executed, and submit them to the Employer's Agent for review. The Contractor shall obtain the consent of the Employer's Agent as to their size, the referencing system, and other relevant details. The Works shall not be considered to be completed for the purposes of the issuing of the Completion Certificate under Clause 5.14.4 until the Employer's Agent has received these documents.
5. TIME AND RELATED MATTERS	
5.3.1	The documentation required before commencement with Works execution is: a) Health and Safety Plan (Refer to Clause PMD-8.3 in the Health and Safety Specification in Part C3.4 in the Scope Work) b) Initial programme (Refer to Clause 5.6) c) Security (Refer to Clause 6.2) d) Insurance (Refer to Clause 8.6) e) Occupational Health and Safety Agreement (Part C1.4 in Agreements and Contract Data) f) Letter of good standing from the Compensation Commissioner, or a licensed compensation insurer (Refer to Clause 4.3) g) Protection of the Environment Declaration (Part C1.5 in Agreements and Contract Data)
5.3.2	Documentation required before commencement with Works execution shall be submitted within **14 days**.
5.4.2	Access to and possession of the Site shall not be exclusive to the Contractor insofar as the provisions of Clause 4.8 apply, and where ongoing use by the general public is required.
	Add the following Clause after Clause 5.4.3:
5.4.4	The Contractor shall bear all costs and charges for special and temporary rights of way required by him in connection with access to the Site.
5.6.1	*Add the following to Clause 5.6.1:* "The programme must be submitted in Gantt chart format. If applicable, expected interface dates with other contractors are to be shown. The Gantt chart should show the baseline and suitable milestones. The programme must clearly identify the critical path for completion of the Works."

Ref/Clause Number	Data
5.8.1	The **non-working days** are Sundays. The **special non-working days** are: a) All gazetted public holidays falling outside the year end break. b) The year-end breaks (all dates inclusive to the yearend breaks) commencing on or around 16 December and ending on or around 7 January.
5.8.1	Delete the words “sunset and sunrise” and replace with “17:00 and 07:00”.
5.12.1	*Add the following to the end of Clause 5.12.1:* “, but shall only be granted where it is also shown that a delay has occurred to the critical path of the approved programme referred to in sub-clause 5.6.3.”

Ref/Clause Number	Data
.12.2.2	No extension of time will be granted in respect of any delays attributed to normal climatic conditions. Normal climatic conditions shall be deemed to include normal rainfall and associated wet conditions and materials, strong winds and extremes of temperature. However, in the event that delays to critical activities exceed the number of working days listed below for each month, then abnormal climatic conditions shall be deemed to exist, and an extension of time may be claimed in accordance with the provisions of Clause 5.12. During the execution of the Works, the Employer's Agent's Representative will certify a day lost due to rainfall only if at least 75% of the work force and plant on site could not work during that specific working day. The number of days quoted below shall be regarded as a fair estimate of the delays to be anticipated and allowed for under normal climatic conditions where inclement weather prevents or disrupts critical work. January 2 days February 2 days March 3 days April 4 days May 8 days June 9 days July 9 days August 8 days September 5 days October 4 days November 2 days December 2 days Claims for delays for abnormal climatic conditions shall be accompanied by substantiating facts and evidence, which shall be submitted timeously as each day or half-day delay is experienced. Extension of time as a result of rainfall shall be calculated monthly being equal to the number days certified by the Employer's Agent's Representative as lost due to rainfall, less the number of days allowed for above, which could result in a negative figure for certain months. The total extension of time for whichthe Contractor may apply, shall be the cumulative algebraic sum of the monthly extensions. Should the sum thus obtained be negative, the extension of time shall be taken as NIL. It shall be further noted that where the critical path is not affected, no extension of time for abnormal climatic conditions or for any other reason will be entertained.
5.13.1	The penalty for failing to complete the Works as per the individual scope of works will be determined separately for each work assignment ranging from a minimum of 3% per month per work package value. *Insert the following after "actual date of Practical Completion":* "… or, in the case of termination by the Employer in terms of Clause 9.2.1, the actual date of termination,"
5.14.1	The **requirements for achieving Practical Completion** will be determined by the Employer's Agent in consultation with the Contractor and Employer, but will as a minimum entail the following: • Full access to the completed works by the Employer.

Ref/Clause Number	Data
5.14.5.1	*Amend Clause 5.14.5.1 as follows*: In the second line, replace the word “Guarantor” with the words “Contractor, who shall then be responsible for returning it to the Guarantor”
5.16.3	The latent defects period is **10 years**.
6. PAYMENT AND RELATED MATTERS	
6.2.1	Delete the word “selected” and replace it with “stated”. The security to be provided by the Contractor shall be a performance guarantee of **10%** of the Contract Sum. The performance guarantee shall contain the precise wording of the document included in Part C1.3 of the Contract Data: **Form of Performance Guarantee**, and it shall be issued by a financial institution approved by the Employer, as listed in the Annexure attached thereto.
6.2.2	*Delete Clause 6.2.2 in its entirety.*
6.2.3	*Delete Clause 6.2.3 in its entirety and replace with the following:* “The Contractor shall ensure that the performance guarantee remains valid and enforceable until the Certificate of Completion of the Works is issued.”
6.4	*Add the following to the end of the clause:* "If the Employer’s Agent requests prices or rates for extra or additional work, the Contractor shall supply the prices or rates for the work within fourteen (14) days of the request. If the Employer’s Agent considers the prices or rates unreasonable he/she shall request the Contractor to revise these prices or rates immediately. Delays that arise as a result of the Contractor's failure to supply reasonable rates within the fourteen (14) days period shall be the responsibility of the Contractor. The prices or rates shall be accompanied by a fully detailed, complete break-down indicating mark- ups throughout and copies of suppliers/sub-contractors quotations shall be attached. On completion of the extra or additional work, and when the Contractor has made payment to his/her suppliers/sub-contractors, the Contractor shall supply the Employer’s Agent with copies of **all** his/her suppliers/sub-contractors, invoices and receipts.”
6.5.1.2.3	The percentage allowance to cover overhead charges is **10%**.

Ref/Clause Number	Data
6.8.2	*Add the following to Clause 6.8.2:* **Adjustment in rates and/or prices** The contract price shall be subject to contract price adjustment in accordance with Clause 6.8: Adjustment in rates and/or prices. If special materials are specified in the Contract Data then the provisions of Clause 6.8.3 shall apply to such special materials. Where applicable, in terms of the foregoing, the value of the certificates issued shall be adjusted in accordance with the contract price adjustment schedule with the values of base month. The base date for the purposes of calculating Contract Price Adjustment (CPA) shall the month prior to the tender closing date. "L" is the "Labour index" and shall be the consumer price index for **Free State Province** "E" is the "Equipment Index" and shall be the price index for "Plant and Equipment", as published in the Statistical Release PO151.1 Table 4 the "Mining and construction plant and equipment price index", of Statistics South Africa. "M" is the "Materials Index" and shall be the price index for "Civil Engineering Material – Structures (Excl. Bitumen)", as published in the Statistical Release PO151.1. Table 6 of the "Civil engineering material price indices" of Statistics. "F" is the "Fuel Index" and shall be the price Index for "Coal and petroleum products: Diesel", as published in the Statistical Release PO142.1 Table 1 the "PPI for final manufactured goods", of Statistics South Africa. Note: The contract price Adjustment factor shall be calculated to six decimal places.
6.8.4	*Add the following to Clause 6.8.4:* "Notwithstanding the above, in the event that a public holiday is proclaimed after 28 days before the closing date for tenders, no costs other than those that can be claimed under Clause 5.12.3 shall be added to the contract price."
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is: **80%**.
6.10.1.7	*Add the following after the words "Clause 5.13":* "or any other fines or penalties that become due under the Contract"

Ref/Clause Number	Data
6.10.3	Delete the word “selected”. *Add the following to Clause 6.10.3:* “Notwithstanding the provision of a performance guarantee in terms of Clause 6.2.1, interim payments to the Contractor shall be subject to a retention by the Employer of an amount of **10%** of the said amounts due to the Contractor, with no limit. A guarantee in lieu of retention is not permitted. Interest will not be paid on retention withheld by the Employer.”
6.10.4	*Add the following to the last sentence of Clause 6.10.4:* “…, dated as at the date of delivery of the Contractor’s statement to the Employer’s Agent.” *Add the following to Clause 6.10.4:* “Notwithstanding the above, the Employer’s Agent shall be empowered to withhold the delivery of the payment certificate until the Contractor has complied with his obligations to report in terms of Clause 4.10.2, and as described in the Scope of Work.”
7. QUALITY AND RELATED MATTERS	
7.5.1	*Add the following to Clause 7.5.1:* “The Contractor shall give notice to the Employer’s Agent at least 48 hours’ notice for the inspection of the works.”
	Add the following Clause after Clause 7.9.1:
7.10	The Contractor shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. The system shall be in accordance with the details stated in the Contract. The Employer’s Agent shall be entitled to audit any aspect of the system. Details of all procedures and compliance documents shall be submitted to the Employer’s Agent for information before each design and execution stage is commenced. When any document of a technical nature is issued to the Employer’s Agent, evidence of the prior approval by the Contractor himself shall be apparent on the document itself. Compliance with the quality assurance system shall not relieve the Contractor of any of his duties, obligations or responsibilities under the Contract.
8. RISKS AND RELATED MATTERS	
8.6.1.1.2	The value of Plant and Materials supplied by the Employer to be included in the insurance sum is **R0.00 (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 **R0.00 (Nil)**.
8.6.1.3	The limit of indemnity for liability insurance will be determined separately for each work assignment – the number of claims to be unlimited during the construction and defects liability periods.

Ref/Clause Number	Data
8.6.1.5	In addition to the insurances required in terms of General Conditions of Contract Clauses 8.6.1.1 to 8.6.1.4 the following insurance is also required: a) Insurance of Construction Equipment (including tools, offices and other temporary structures and contents) and other things (except those intended for incorporation into the Works) brought onto the site for a sum sufficient to provide for their replacement. b) Insurance in terms of the provisions of the Compensation for Occupational Injuries and Diseases Act, 130 of 1993. c) Motor Vehicle Liability Insurance comprising (as a minimum) "Balance of Third Party" Risks including Passenger Liability Indemnity.
	d) Where the contract involves manufacturing and/or fabrication of the works or part thereof at premises other than the Site, the Contractor shall satisfy the Employer that all materials and equipment for incorporation in the works are adequately insured during manufacture and/or fabrication. In the event of the Employer having an insurable interest in such works during manufacture or fabrication then such interest shall be noted by endorsement to the Contractor's Policies of Insurance.
8.6.6	The evidence that the insurances have been effected in terms of Clause 8.6.1, shall be in the form of an insurance broker's warranty worded precisely as given in Part C1.6 Insurance Broker's Warranty.
9. TERMINATION OF CONTRACT	
9.1.6	*Replace "and 9.1.3" with:* ", 9.1.3 and 9.1.7"
	Add the following Clause after Clause 9.1.6:
9.1.7	Death of Sole Proprietor/Member Upon the death of the Contractor who was a Sole Proprietor, or a sole member of a Close Corporation, the Contract will terminate forthwith. The Employer shall pay to the Contractor's estate any money which it considers due under the Contract in terms of Clause 9.1.5, in full and final settlement thereof.
9.2.1	*Delete "or" at the end of Clause 9.2.1.3.6 and add the following three Clauses after Clause 9.2.1.3.7:*
9.2.1.3.8	Has failed to provide the required insurances within the prescribed time,
9.2.1.3.9	Has committed a corrupt or fraudulent act during the tender process or the execution of the Contract, or
9.2.1.3.10	Has benefitted from an official or other role player committing any corrupt or fraudulent act during the tender process or in the execution of the Contract.
10. CLAIMS AND DISPUTES	

Ref/Clause Number	Data
10.1.3.1	*Add the following sentence to the last sentence of this sub-clause 10.1.3.1*: ", but not more than 14 days after the occurrence."
10.5.1	Dispute resolution is to be by means of ad-hoc adjudication.
10.5.3	The number of Adjudication Board Members to be appointed is: **Nil**
10.7.1	Failing ad-hoc adjudication, the determination of disputes shall be by arbitration.
	ADDITIONAL CONDITIONS OF CONTRACT *Add the following Clause after Clause 10:*
11	Details to be confidential The Contractor shall treat the details of the Works comprised in this Contract as private and confidential (save in so far as may be necessary for the purposes hereof) and shall not publish or disclose the same or any particulars thereof in any trade or technical paper elsewhere without theprior written consent of the Employer's Agent.

C1.2.2.2 PART 2: DATA TO BE PROVIDED BY THE CONTRACTOR

1.1.1.9	The legal name of the Contractor is: ....
1.2.1.2	The Physical address of the Contractor is: .... The Postal address of the Contractor is: .... The contract details of the Contractor is: Telephone: ..... Fax: ..... Email: .....

DIHLABENG LOCAL MUNICIPALITY

C1.3 FORM OF PERFORMANCE GUARANTEE

Pro Forma

TO BE COMPLETED ON AWARD OF WORK ASSIGNMENT

For use with the General Conditions of Contract for Construction Works, Third Edition, 2015.

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means: .....

"Physical address: .....

"Employer" means: The Dihlabeng Local Municipality.

"Contractor" means: .....

"Employer's Agent" means: .....

"Works" means: Contract No. **PW029/2023: PROVISION OF ROADS AND STORM WATER CIVIL INFRASTRUCTURE FOR A PERIOD OF THIRTY SIX (36) MONTHS FROM DATE OF APPOINTMENT**.

"Site" means: The site as defined in Clause 1.1.1.29 of the General Conditions of Contract.

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

"Contract Sum" means: The accepted amount inclusive of tax of R .....

Amount in words: .....

"Guaranteed Sum" means: The maximum aggregate amount of R .....

Amount in words: .....

"Expiry Date" means: The date of issue by the Employer's Agent of the Certificate of Completion of the Works.

CONTRACT DETAILS

Engineer issues: Interim Payment Certificates, Final Payment Certificate and the Certificate of Completion of the Works as defined in the Contract.

PERFORMANCE GUARANTEE

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.

2. The Guarantor's period of liability shall be from and including the date of issue of this Performance Guarantee and up to and including the Expiry Date or the date of issue by the Employer's Agent of the Certificate of Completion of the Works or the date of payment in full of the Guaranteed Sum, whichever occurs first. The Employer's Agent and/or the Employer shall advise the Guarantor in writing of the date on which theCertificate of Completion 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 intentionwhatsoever to create a suretyship;

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 issued by the Employer to the Contractor stating that payment of a sum certified by the Employer's Agent 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 with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum certified has still not been paid;

4.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified 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 calling up this Performance Guarantee, such demand stating that:

5.1 the Contract has been terminated due to the Contractor's default and that 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.

7. Where the Guarantor has made payment in terms of 5, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.

8. 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.

9. Payment by the Guarantor in terms of 5 will only be made against the return of the original Performance Guarantee by the Employer.

10. 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 this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.

11. The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.

12. This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.

13. 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.

14. 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 Courts 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.

Signed at .....

Date .....

Guarantor's signatory (1) .....

Capacity .....

Guarantor's signatory (2) .....

Capacity .....

Witness signatory (1) .....

Witness signatory (2) .....

DIHLABENG LOCAL MUNICIPALITY

C1.4 OCCUPATIONAL HEALTH AND SAFETY AGREEMENT

TO BE COMPLETED ON AWARD OF WORK ASSIGNMENT

AGREEMENT MADE AND ENTERED INTO BETWEEN THE DIHLABENG LOCAL MUNICIPALITY (HEREINAFTERCALLED THE "EMPLOYER") AND

……..……. ,
(Contractor/Mandatary/Company/CC Name)

IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, 85 OF 1993 AS AMENDED.

I,....., representing

……..……. , as an employer
in its own right, do hereby undertake to ensure, as far as is reasonably practicable, that all work will be performed, and all equipment, machinery or plant used in such a manner as to comply with the provisions of the Occupational Health and Safety Act (OHSA) and the Regulations promulgated thereunder.

I furthermore confirm that I am/we are registered with the Compensation Commissioner and that all registration and assessment monies due to the Compensation Commissioner have been fully paid or that I/We are insured with an approved licensed compensation insurer.

COID ACT Registration Number: ……..

OR Compensation Insurer: ..... Policy No.: .....

I undertake to appoint, where required, suitable competent persons, in writing, in terms of the requirements of OHSA and the Regulations and to charge him/them with the duty of ensuring that the provisions of OHSA and Regulations as well as the Council's Special Conditions of Contract, Way Leave, Lock-Out and Work Permit Procedures are adhered to as far as reasonably practicable.

I further undertake to ensure that any subcontractors employed by me will enter into an occupational health and safety agreement separately, and that such subcontractors comply with the conditions set.

I hereby declare that I have read and understand the appended Occupational Health and Safety Conditions and undertake to comply therewith at all times.

I hereby also undertake to comply with the Occupational Health and Safety Specification and Plan.

Signed at .....on the.....day of.....20….

_____ _____
Witness **Mandatary**

Signed at ..... on the.....day of.....20 ....

_____ _____
Witness for and on behalf of
Dihlabeng Local Municipality

OCCUPATIONAL HEALTH AND SAFETY CONDITIONS

1. The Chief Executive Officer of the Contractor shall assume the responsibility in terms of Section 16(1) of the Occupational Health and Safety Act (as amended). Should the Contractor assign any duty in terms of Section 16(2), a copy of such assignment shall immediately be provided to the representative of the Employer as defined in the Contract.

2. All work performed on the Employer's premises shall be performed under the supervision of the construction supervisor who understand the hazards associated with any work that the Contractor performs on the site in terms of Construction Regulations, 2014.

3. The Contractor shall appoint a Competent Person who shall be trained on any occupational health and safety aspect pertaining to them or to the work that is to be performed.

4. The Contractor shall ensure that he familiarises himself with the requirements of the Occupational Health and Safety Act and that he, his employees, and any sub-contractors, comply with them.

5. Discipline in the interests of occupational health and safety shall be strictly enforced.

6. Personal protective equipment shall be issued by the Contractor as required and shall be worn at all times where necessary.

7. Written safe work procedures and appropriate precautionary measures shall be available and enforced, and all employees shall be made conversant with the contents of these practices.

8. No substandard equipment/machinery/articles or substances shall be used on the site.

9. All incidents referred to in terms of Section 24 of the Occupational Health and Safety Act shall be reported by the Contractor to the Department of Labour and the Employer.

10 The Employer hereby obtains an interest in the issue of any formal inquiry conducted in terms of Section 32 of the Occupational Health and Safety Act and into any incident involving a Contractor and/or his employees and/or his sub-contractor/s.

11. No use shall be made of any of the Employer's machinery/plant/equipment/substance/personal protective equipment or any other article without prior arrangement and written approval.

12. No alcohol or any other intoxicating substance shall be allowed on the site. Any person suspected of being under the influence of alcohol or any other intoxicating substance shall not be permitted access to, or allowed to remain on the site.

13. Prior to commencement of any work, verified copies of all documents mentioned in the agreement, must be presented to the Employer.

14. The Contractor shall prepare and maintain a Health and Safety File in respect of the project, which shall be available for inspection on Site at all times and handed over to the Employer on Final Completion of the project.

DIHLABENG LOCAL MUNICIPALITY

C1.5 PROTECTION OF THE ENVIRONMENT DECLARATION

TO BE COMPLETED ON AWARD OF WORK ASSIGNMENT

The Contractor will not be given right of access to the Site until this form has been signed

CONTRACT NO.: PW029/2023

CONTRACT TITLE: PROVISION OF ROADS AND STORM WATER CIVIL INFRASTRUCTURE FOR A PERIOD OF THIRTY SIX (36) MONTHS FROM DATE OF APPOINTMENT

I/ we,. .....{Contractor} record as follows:

1. I/ we, the undersigned, do hereby declare that I/ we am/ are aware of the increasing requirement by society that construction activities shall be carried out with due regard to their impact on the environment.

2. In view of this requirement of society and a corresponding requirement by the Employer with regard to this Contract, I/ we will, in addition to complying with the letter of the terms of the Contract dealing with protection of the environment, also take into consideration the spirit of such requirements and will, in selecting appropriate employees, plant, materials and methods of construction, in-so-far as I/ we have the choice, include in the analysis not only the technical and economic (both financial and with regard to time) aspects but also the impact on the environment of the options. In this regard, I/ we recognise and accept the need to abide by the "precautionary principle" which aims to ensure the protection of the environment by the adoption of the most environmentally sensitive construction approach in the face of uncertainty with regard to the environmental implications of construction.

3. I/ we declare that I/ we have read and understood the contents of the Environmental Management Programme (which is comprised of the Environmental Specification and its Annexures) for this Contract, and that I/ we understand my/our responsibilities in terms of enforcing and implementing the Environmental Management Programme. I/ we also declare that I/ we have made appropriate provision in my/ our pricing of the Bills of Quantities items for the Environmental Management Programme.

4. I/ we acknowledge and accept the right of the Employer to deduct, should he so wish, from any amounts due to me/ us, such amounts (hereinafter referred to as fines) as the Employer's Agent shall certify as being warranted in view of my/ our failure to comply with the terms of the Contract dealing with protection of the environment, subject to the following:

4.1 The Employer's Agent, in determining the amount of such fine, shall take into account, *inter alia*, the nature of the offence, the seriousness of its impact on the environment, the degree of prior compliance/non-compliance, the extent of the Contractor's overall compliance with environmental protection requirements and, in particular, the extent to which he considers it necessary to impose a sanction in order to eliminate/reduce future occurrences

4.2 The Employer's Agent shall, with respect to any fine imposed, provide me/ us with a written statement giving details of the offence, the facts on which the Employer's Agent has based his assessment and the terms of the Contract (by reference to the specific clause) which has been contravened.

Signed .....…… Date.....
CONTRACTOR

DIHLABENG LOCAL MUNICIPALITY

C1.6 INSURANCE BROKER'S WARRANTY

TO BE COMPLETED ON AWARD OF WORK ASSIGNMENT

Pro Forma

Logo

Letterhead of Contractor's Insurance Broker

Date .....

DIHLABENG LOCAL MUNICIPALITY
PO Box 551
BETHLEHEM
9700

Dear Sir

CONTRACT NO.: PW029/2023

CONTRACT TITLE: PROVISION OF ROADS AND STORM WATER CIVIL INFRASTRUCTURE FOR A PERIOD OF THIRTY SIX (36) MONTHS FROM DATE OF APPOINTMENT

NAME OF CONTRACTOR:

I, the undersigned, do hereby confirm and warrant that all the insurances required in terms of the abovementioned contract have been issued and/or in the case of blanket/umbrella policies, have been endorsed to reflect the interests of the DIHLABENG LOCAL MUNICIPALITY with regard to the abovementioned contract, and that all the insurances andendorsements, etc., are all in accordance with the requirements of the contract.

I furthermore confirm that all premiums in the above regard have been paid.

Yours faithfully

Signed: _____

For: _____

DIHLABENG LOCAL MUNICIPALITY

Part C2: Pricing Data

Pages

DIHLABENG LOCAL MUNICIPALITY

C2.1 PRICING ASSUMPTIONS

Pricing Assumptions mean the criteria as set out below, read together with all Parts of this contract document, which it will be assumed in the Contract that the tenderer has taken into account when developing his prices.

1. All rates to exclude VAT. (Vat will be added when an individual assignment is compiled).

2. The method of measurement published by the COLTO Standard Specifications for Road and Bridge Works for State Road Authorities are applicable

3. Measurement and payment shall be in accordance with the COLTO Standard Specifications for Road and Bridge Works for State Road Authorities, subject to the variations and amendments contained in the section. Should any requirements of the measurement and payment clause of the applicable COLTO Standardised Specification, or the Scope of Work, conflict with the terms of the Schedule, the requirements of the COLTO Standardised Specification or Scope of Work, as applicable, shall prevail.

4. The rates and / or prices submitted and stated in the Pricing Data shall be final and binding throughout the period of the Contract. Where the tenderer has stipulated conditions tied to a submitted rate, and the condition results in a variance in the rate, the rate will be deemed null and void. Contract Price Adjustment and Rise is applicable as well as Rise and Fall on bituminous items.

5. For the purpose of the Bill of Quantities, the following words shall have the meanings hereby assigned to them:

   i. **Unit**: The unit of measurement for each item of work as defined in the Standard Specifications.
   ii. **Quantity:** The number of units of work for each item.
   iii. **Rate**: The agreed payment per unit of measurement.
   iv. **Amount**: The product of the quantity and the agreed rate for an item.
   v. **Lump sum**: An agreed amount for an item, the extent of which is described in the Bill of Quantities but the quantity of work of which is not measured in any units.
   vi. **Provisional sum**: An amount provided for work the scope and/or the necessity of which is undecided and which will be dealt with in accordance with clause 6.6.1 of the General Conditions of Contract.
   vii. **Prime cost sum**: An amount provided to cover the cost price of certain goods, services or materials in accordance with clause 6.6.2 of the General Conditions of Contract.

5. The units of measurement described in the Bill of Quantities are metric units. Abbreviations used in the Bill of Quantities are as follows:

%	=	percent
h	=	hour
ha	=	hectare
kg	=	kilogram
kl	=	kilolitre
km	=	kilometre
km-pass	=	kilometre-pass
kPa	=	kilopascal
kW	=	kilowatt
l	=	litre
m	=	metre
mm	=	millimetre
m^2	=	square metre
m^2-pass	=	square metre-pass
m^3	=	cubic metre
m^3-km	=	cubic metre-kilometre
MN	=	mega newton
MN.m	=	mega newton-metre
MPa	=	mega pascal
No.	=	number
Prov sum		Provisional sum

PC sum = Prime Cost sum
R/only = Rate only
sum = lump sum
t = ton (1000 kg)
W/day = Work day

6. The quantities set out in the Bills of Quantities are indicative of a medium sized Work Assignment / Package / project, but the Contractor will be required to undertake whatever quantities may be directed by the Employer or his agent. The Contract Price for a completed Work Assignment / Package / project shall be computed from the actual quantities of work done, valued at the relevant unit rates and prices. Quantities listed will vary for smaller or larger Work Assignment / Packages.

7. It will be assumed that prices included in the bills of quantities are based on Acts, Ordinances, Regulations, By-laws, International Standards and National Standards that were published 28 days before the closing date for tenders.

8. The rates in the Bill of Quantities are to be fully inclusive rate for the work described under the several items. Such rates cover all costs and expenses that may be required in and for the execution of the work described in accordance with the provisions of the Scope of Work, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the Contract Data, as well as overhead charges and profit. Reasonable rates 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. Rates submitted are applicable to all areas falling within the Dihlabeng Municipal Area.

9. Unless otherwise stated, items are measured net in accordance with final and actual quantities used with no allowance made for waste.

10. A rate/amount is to be entered against all items in the schedule of fees/Bill of Quantities, an item against which no rate/amount is entered will lead to immediate disqualification due to unfair price advantage;

    The tendered rates, prices and sums shall, subject only to the provisions of the Conditions of Contract, remain valid irrespective of any change in the quantities during the execution of the Contract.

11. Where the Scope of Work requires detailed drawings and designs or other information to be provided, all costs associated therewith are deemed to have been provided for and included in the unit rates and sum amount tendered such items.

12. Reasonable compensation will be received where no pay item appears in the Bill of Quantities in respect of work required in terms of the Contract and which is not covered in any other pay item.

13. The short descriptions of the items of payment given in the Bill of Quantities are only for the purposes of identifying the items. More details regarding the extent of the work entailed under each item appear in the COLTO Standard Specifications for Road and Bridge Works for State Road Authorities.

14. The item numbers appearing in the Bill of Quantities refer to the corresponding item numbers in the COLTO Standard Specifications for Road and Bridge Works for State Road Authorities.

14. The base date for the purposes of calculating Contract Price Adjustment (CPA) shall be the month before the tender closing date.

15. Due to CIDB requirements, tenderers are to price work in line with CIDB tender value range.

16. Note that the Municipality reserves the right to reduce the value of Work Assignment / Package so that the value of the work package is in line with the approved or amended municipal budget.

C2.2 BILLS OF QUANTITIES

NOTE: RATES ARE EXCLUSIVE OF VAT.

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
13.00	**CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS**				
B13.01.01	**Road Rehabilitation**				
	(a) Fixed obligations	Per Site	6		
	(c) Time-related obligations	Per Day	20		
	(d) Fixed obligations for Works >R3 million	Per Site	3		
	(e) Time-related obligations for Works >R3 million	Per Day	10		
B13.01.02	**Resealing of Roads**				
	(a) Fixed obligations	Per Site	6		
	(c) Time-related obligations	Per Day	30		
	(d) Fixed obligations for Works >R3 million	Per Site	3		
	(e) Time-related obligations for Works >R3 million	Per Day	10		
B13.01.03	**New road and Upgrading of Gravel Roads to Surface Road Standards**				
	(a) Fixed obligations	Per Site	1		
	(c) Time-related obligations	Per Day	40		
	(d) Fixed obligations for Works >R3 million	Per Site	2		
	(e) Time-related obligations for Works >R3 million	Per Day	10		
B13.01.04	**Construction of Additional lanes on Roadways and Intersection Improvements**				
	(a) Fixed obligations	Per Site	1		
	(c) Time-related obligations	Per Day	40		
	(d) Fixed obligations for Works >R3 million	Per Site	1		
	(e) Time-related obligations for Works >R3 million	Per Day	20		
B13.01.05	**Construction of Sidewalks, Pathways and Minor Roadworks**				
	(a) Fixed obligations	Per Site	6		
	(c) Time-related obligations	Per Day	30		
	(d) Fixed obligations for Works >R3 million	Per Site	3		
	(e) Time-related obligations for Works >R3 million	Per Day	20		
B13.01.06	**Construction of Stormwater Drainage Facilities**				
	(a) Fixed obligations	Per Site	6		
	(c) Time-related obligations	Per Day	30		
	(d) Fixed obligations for Minor Works >R3 million	Per Site	3		
	(e) Time-related obligations for Works	Per	15		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	>R3 million	Day			
B13.01.07	**Ancillary Roadworks and Sundry Structures (Colto Series 5000 and 7000)**				
	(a) Fixed obligations	Per Site	6		
	(c) Time-related obligations	Per Day	30		
	(d) Fixed obligations for Works >R 3million	Per Site	3		
	(e) Time-related obligations for Works >R3 million	Per Day	10		
B13.01.08	Extra Over for Items B13.01.02 and B13.01.03 for loss of production, where roadworks can only be carried out, outside of the peak period) between 9:00 and 15:00.	Day	10		
B13.02	Contract Signboard see drawing RST 001	No	2		
				TOTAL AMOUNT	

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
15.00	**ACCOMODATION OF TRAFFIC**				
	Road traffic signs and markings				
15.03	**Temporary traffic control facilities:**				
	a) Flagmen(Possible Labour Intensive Activity refer to Pricing Instructions)	Man days	100		
	b)Portable STOP and GO-RY signs	No	100		
	d) Amber flicker lights	No	50		
	e) Road signs R and TR series 900mm dia.				
	i) Mounted on stands	No	50		
	ii) Fixed in ground	No	50		
	f) Road signs W and TW series 1200mm sides				
	i) Mounted on stands	No	20		
	ii) Fixed in ground	No	5		
	g) Road signs STW, DTG, TGS and TG (excluding delineators and barricades)				
	i) Mounted on stands	m²	50		
	ii) Fixed in ground	m²	50		
	h) Delineators				
	i) Single sided, size 150mm x 600mm	No	100		
	ii) Double sided, size 150mm x 600mm	No	100		
	i) Movable barricade road sign combination TW411/TR104 or 103 (2400mm x 400mm and 600mm dia.)	No	30		
	j) Traffic cones TD4 (minimum height 600mm)	No	100		
	l) Temporary information signs (TIN), mounted on stands				
	i) Mounted on stands	m²	50		
	ii) Fixed in ground	m²	50		
	m) Two-way communication devices	No	10		
				TOTAL AMOUNT	

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
16.00	**OVERHAUL**				
B16.02	Overhaul on material in excess of 5.0 km (ordinary overhaul)	m^3km	1000		
				TOTAL AMOUNT	

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
17.00	**CLEARING AND GRUBBING**				
17.01	**Clearing and grubbing**	ha	0.5		
17.02	**Removal and grubbing of large trees and tree stumps:**				
	a) Girth exceeding 1 m up to and include 2 m	No	2		
	b) Girth exceeding 2 m up to and include 3 m	No	2		
17.03	Re-clearing of surfaces (on the written instructions of the engineer only)	ha	0.5		
17.04	Clearing and grubbing at inlets and outlets of hydraulic structures	m^2	200		
17.05	**Cleaning out of hydraulic structures**				
	a) Pipes with internal diameter up to and including 750 mm	m^3	10		
	b) Pipes with an internal diameter exceeding 750 mm	m^3	10		
	c) Box culverts up to and including 1.5 m vertical dimension	m^3	10		
	d) Box culverts exceeding 1.5 m vertical dimension	m^3	10		
B17.07	**Cleaning of other constructed surfaced areas**	m^3	10		
				TOTAL AMOUNT	

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
21.00	**SUBSURFACE DRAINS**				
21.01	**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	50		
	(ii) exceeding 1.5 m and up to 3.0 m	m^3	30		
	b) Extra over subitem 21.01 (a) for excavation in hard material, irrespective of depth	m^3	10		
21.02	**Clearing and shaping existing open drains**	m^3	50		
21.03	**Excavation for subsoil drainage systems:**				

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	(i) 0 m up to 1.5 m	m^3	50		
	(ii) exceeding 1.5 m and up to 3.0 m	m^3	50		
	b) Extra over subitem 21.03 (a) for excavation in hard material, irrespective of depth	m^3	10		
21.04	**Impermeable backfilling to subsoil drainage system**	m^3	30		
21.06	**Natural permeable material in subsoil drainage systems (crushed stone)**				
	a) Crushed stone obtained from commercial sources (+3mm - 27mm)	m^3	20		
21.08	**Pipes in subsoil drainage systems:**				
	a) Unplasticised PVC pipes and fittings, normal duty, complete with couplings (100mm inside diameter, perforated / slotted)	m	100		
	b) High-density type polyethylene drainage pipes and fittings, complete with couplings (100mm inside diameter, perforated)	m	100		
21.10	a) **Synthetic-fiber filter fabric** (woven polypropylene, grade S120)	m^2	200		
	b) **Synthetic-fiber filter fabric** (non - woven polyester, grade U12)	m^2	200		
21.12	**Concrete outlet structures, manhole boxes, junctions boxes and cleaning eyes for subsoil drainage systems**				
	Cleaning eyes for subsurface drainage systems SSW20	No	6		
21.13	**Concrete caps for sub-soil drain pipes: See drawing SSW20**	No	6		
21.16	**Backfilling existing eroded side drains**	m^3	10		
21.17	**Test flushing of pipe subsoil drains**	No	3		
21.18	**Excavation for the clearing of existing drainage systems:**				
	a) Manholes & inlets and outlet structures	m^3	4		
	b) Culvert barrels	m^3	4		
	c) Concrete side drains	m^3	4		
				TOTAL AMOUNT	

22.00	**<u>PREFABRICATED CULVERTS</u>**				
22.01	**Excavation**				
	(a) Excavating soft material situated within the following depth ranges below the surface level:				

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	(i) 0 m up to 1,5 m	m^3	80		
	(ii) 1,5 m to 3,0 m	m^3	30		
	(b) Extra over sub item 22.01(a) for excavation in hard material, irrespective of depth	m^3	20		
22.02	**Backfilling**				
	(a) Using the excavated material	m^3	30		
	(b) Using imported selected material obtained from commercial sources (unlimited free-haul)	m^3	20		
22.03	**Concrete pipe culverts:**				
	(b) (1) On class 'B' bedding (300mm diam., Type Ogee, Class 100D)	m	100		
	(2) On class 'B' bedding (375mm diam., Type Ogee, Class 100D)	m	100		
	(3) On class 'B' bedding (450mm diam., Type Ogee, Class 100D)	m	100		
	(4) On class 'B' bedding (525mm diam., Type Ogee, Class 100D)	m	50		
	(5) On class 'B' bedding (600mm diam., Type Ogee, Class 100D)	m	50		
	(d) (1) On class 'D' bedding (300mm diam., Type Ogee, Class 100D)	m	100		
	(2) On class 'D' bedding (375mm diam., Type Ogee, Class 100D)	m	100		
	(3) On class 'D' bedding (450mm diam., Type Ogee, Class 100D)	m	100		
	(4) On class 'D' bedding (525mm diam., Type Ogee, Class 100D)	m	50		
	(5) On class 'D' bedding (600mm diam., Type Ogee, Class 100D)	m	50		
22.05	**Portal and rectangular culverts:**				
	(a) Complete with prefabricated floor slabs (1500mm x 1200mm, precast concrete)	m	30		
22.07	**Cast in situ concrete and formwork**				
	(c) Inlet and outlet structures, skewed ends, catchpits, manholes, thrust and anchor blocks, excluding formwork but including class U2 surface finish (20Mpa concrete)	m^3	30		
	(d) Formwork of concrete under subitem 22.07(c) above	m^2	80		
22.14	**Removing and stacking existing prefabricated culverts**	m	100		
22.17	**Manholes, catchpits, precast inlet and outlet structure complete:**				
	(a) Stormwater Manholes for pipe diameters up to 600mm (Drawing No. SW1, SW2, SW3)	No	5		
	(b) Stormwater Manholes for subsurface drainage (Drawing No. SW19)	No	5		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	(c) Catchpits (Type A) (Drawing No SSW7, SSW8, SSW9, SSW10)	No	5		
	(e) Extra over or less than sub item 22.17(a) for variations in the depths of manholes from the standard depth designated for tendering purposes (1,65m standard depth)	m	5		
	(f) Extra over or less than sub item 22.17(b) for variations in the depths of catchpits from the standard depth designated for tendering purposes (0,85m standard depth from top of kerb)	m	5		
22.18	**Brickwork**				
	a) 115 mm thick	m^2	50		
	b)230 mm thick	m^2	50		
	c)345 mm thick	m^2	20		
22.21	**Accessories:**				
	(a) Manhole covers including frames (see Drawing No. SSW19)	No	5		
	(b) Inlet grids including frames (ductile iron hinged type)	No	5		
	(c) Step irons (cast iron type)	No	5		
22.23	**Service and service ducts:**				
	(aa) Ordinary pipes (150 mm dia. uPVC; thrustbored < 20m length)	m	30		
	(ab) Ordinary pipes (150 mm dia. uPVC; thrustbored > 20m length)	m	30		
	(ac) Ordinary pipes (110 mm dia., HDPE)	m	30		
22.24	**Duct marker blocks (precast concrete type)**	No	5		
22.26	**Hand excavation to determine the positions of existing services**	m^3	5		
22.27	**Reinstating trenches crossing roads:**				
	a) Selected layers (150 mm thickness)	m^2	10		
	b) Subbase (150 mm thickness)	m^2	10		
	c) Base (including prime coat) (150 mm thickness)	m^2	10		
	d) Bituminous surfacing (including tack coat) (40 mm thickness)	m^2	10		
B22.29	**(a) Raising or lowering of existing catchpits and manholes**	No	10		
	(b) The raising and lowering of junction boxes, valve boxes and survey markers	No	10		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
				TOTAL AMOUNT	

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
23.00	**CONCRETE KERBING, CONCRETE CHANNELLING, CHUTES AND DOWNPIPES, AND CONCRETE LININGS FOR OPEN DRAINS.**				
23.01	**Concrete kerbing:**				
	(a) Type BK4				
	(i) 1000mm units	m	50		
	(ii) 300/330mm units	m	20		
	(b) Type BK2 (see Drawing No. SR6)				
	(i) 1000mm units	m	50		
	(ii) 300/330mm units	m	20		
	(c) Type MK2 (see Drawing No. R1A)				
	(i) 1000mm units	m	50		
	(ii) 300/330mm units	m	20		
	(d) Type MK7 (see Drawing No. SR10)				
	(i) 750mm units	m	50		
	(ii) 375mm units	m	20		
	(e) Type MK10 (see Drawing No. SR9)				
	(i) 1000mm units	m	50		
	(ii) 300/330mm units	m	20		
	(g) Type Edging E3	m	50		
	(h) Type Footway Edging E1	m	50		
23.02	**Concrete kerbing-channellingcombination:**				
	(a) Type BK4 kerb & C1 channel				
	(i) 1000mm units	m	50		
	(ii) 300/330mm units	m	20		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	(b) Type BK2 kerb & C1 channel (see Drawing No. SR7)				
	(i) 1000mm units	m	50		
	(ii) 300/330mm units	m	20		
	(d) Type MK10 kerb & C1 channel				
	(i) 1000mm units	m	50		
	(ii) 300/330mm units	m	20		
	(f) Type CK5 (see Drawing No. SR8)				
	(i) 1000mm units	m	50		
	(ii) 300/330mm units	m	20		
23.03	**Concrete chutes:**				
	(a) CAPE CONCRETE type embankment chute (trapezoidal in plan) or similar approved (1,0m unit length)	m	50		
23.06	**Inlet, outlet, transition and similar structures**				
	a) Concrete 20MPa	m^3	8		
	b) Formwork with wood float finish	m^2	20		
	c) Transition drawings SR11, SR12, SR13, SR14, SR15, SR16,	No	2		
23.11	**Concrete screed or backfill below chutes (15 MPa concrete)**	m^3	10		
23.14	**Cutting bituminous surfacing and pavement layers for concrete, kerbing, channelling or concrete-lined drains:**	m	20		
B23.16	**Demolish and remove existing kerbing, channelling and edging off site**				
	(a) Precast kerb	m	20		
	(b) Precast channel				
	(i) Single	m	20		
	(ii) Double	m	20		
	(iii) Triple	m	20		
	(c) Precast kerb and channel	m	20		
	(d) Precast edging	m	20		
B23.17	**Remove existing kerbing, channelling and edging and set aside for reuse**				

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	(a) Precast kerb	m	20		
	(a) Precast channel	m	20		
	(i) Single	m	20		
	(ii) Double	m	20		
	(iii) Triple	m	20		
	(c) Precast kerb and channel	m	20		
	(d) Precast edging	m	20		
B23.18	**Concrete channelling:**				
	(a) Precast half round channel Type W3	m	30		
	(b) V-Channel / Double flat channel (2 No x C1 Channels)	m	30		
	(c) V-Channel / Double flat channel with concrete infill up to 100mm	m	30		
	(d) Triple flat channel (2 No x C1 Channels plus 1 No C2 channel)	m	30		
	(e) Single channel Type C1	m	30		
	(f) Single channel Type C2	m	30		
B23.19	**Concrete infill for V Channel / Double Flat**				
	(a) Cast in-situ 50mm width	m	30		
	(b) Cast in-situ 75mm width	m	30		
	(c) Cast in-situ 100mm width	m	30		
B23.20	**Relay existing concrete kerbing and/or channelling and edging**				
	(a) Precast kerb only	m	20		
	(b) Precast channel only	m	20		
	(i) Single	m	20		
	(ii) Double	m	20		
	(iii) Triple	m	20		
	(c) Precast kerb and channel	m	20		
	(d) Precast edging - Type E3	m	20		
	(e) Precast edging - Type E1	m	20		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
B23.21	**Extra over items B23.01, B23.02, B23.20 for drop kerbs at entrances and bell mouths**	m	10		
				TOTAL AMOUNT	

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
33.00	**MASS EARTHWORKS**				
B33.01	**Cut and borrow to fill, including free-haul up to 5.0 km**	m^3	100		
B33.02	**Sand fills (as obtained in clause 3302, obtained from commercial sources, unlimited free-haul):**				
	(a) Non-Plastic sand with up to 20% passing through the 0,075mm sieve, compacted to 100% of modified AASHTO density.	m^3	50		
B33.04	**Cut to spoil, including free-haul up to 5km, material obtained from:**				
	(a) Soft excavation	m^3	100		
	(b) Intermediate excavation	m^3	50		
	(c) Hard excavation	m^3	5		
B33.07	**Removal of unsuitable material (including free-haul up to 5.0km)**				
	(a) In layer thicknesses of 200 mm or less				
	(i) Stable material	m^3	10		
	(ii) Unstable Material	m^3	10		
33.10	**Roadbed preparation and the compaction of material:**				
	(b) Compaction to 93% of modified AASHTO density	m^3	100		
	(c) Compaction to 95% of modified AASHTO density	m^3	100		
	(d) Compaction of sand roadbed to 100% of modified AASHTO density	m^3	10		
33.12	**In situ treatment of roadbed:**				
	(a) In situ treatment by ripping	m^3	50		
				TOTAL AMOUNT	

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
34.00	**PAVEMENT LAYERS OF GRAVEL MATERIAL**				
34.01	**Pavement layers constructed from gravel taken from commercial sources (unlimited free-haul):**				
	(a) (i) Gravel Selected Layer G7 150mm layer thickness, compacted to 93% of modified AASHTO density	m^3	100		
	(a) (ii) Gravel Selected Layer G7 150mm layer thickness, compacted to 95% of modified AASHTO density	m^3	100		
	(c) (i) Gravel subbase (unstabilized) G5 150mm layer thickness, compacted to 95% of modified AASHTO density	m^3	100		
	(c) (ii) Gravel subbase (unstabilized) G5 150mm layer thickness, compacted to 97% of modified AASHTO density	m^3	100		
	(d) (i) Gravel Subbase (cement stabilized) G5 150mm compacted to 95% of modified AASHTO density	m^3	100		
	(d) (ii) Gravel Subbase (cement stabilized) G5 150mm compacted to 97% of modified AASHTO density	m^3	100		
	(e) Gravel base (unstabilized) G4 150mm layer thickness, compacted to 98% of modified AASHTO density	m^3	100		
	(f)(i) Gravel base (cement stabilized) G4 150mm layer thickness, compacted to 97% of modified AASHTO density	m^3	100		
	(h) Gravel wearing course (Laterite or similar approved) compacted to:				
	(ii) 95% of modified AASHTO density				
	1) 70mm layer thickness	m^3	50		
	2) 100mm layer thickness	m^3	50		
34.03	**Pavement layers constructed from gravel obtained from existing pavement layers:**				
	(a) Gravel Selected Layer G7 , compacted to 93% of modified AASHTO density				
	(i) Non cemented layer, 150mm thick	m^3	100		
	(b) Gravel Selected Layer G7 , compacted to 95% of modified AASHTO density				
	(i) Non cemented layer, 150mm thick	m^3	100		
	(d) Gravel subbase (unstabilized) G5 , compacted to 95% of modified AASHTO density				
	(i) Non cemented layer, 150mm thick	m^3	100		
	(f) Gravel Subbase (cement stabilized) G5 compacted to 95% of modified AASHTO density				

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	(i) Non cemented layer, 150mm thick	m^3	100		
	(h) Gravel Base (unstabilized) G4 , compacted to 98% of modified AASHTO density				
	(i) Non cemented layer, 150mm thick	m^3	100		
	(k) Gravel Base (cement stabilized) G4 compacted to 97% of modified AASHTO density				
	(i) Non cemented layer, 150mm thick	m^3	100		
	(o) Gravel wearing course (Laterite or similar approved) compacted to 95% of modified AASHTO density				
	(i) Non cemented layer, 100mm thick	m^3	100		
34.04	**In situ reconstruction of existing pavement layers as:**				
	(g) Gravel base compacted to 98% modified AASHTO density (unstabilized gravel) using:				
	(i) Non-cemented material (150 mm layer thickness)	m^3	100		
				TOTAL AMOUNT	

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
35.00	**STABILIZATION**				
35.01	**Chemical stabilization (150 mm)**				
	i) G7 selected	m^3	50		
	ii) G4 base	m^3	50		
	iii) G5 subbase	m^3	50		
35.02	**Chemical stabilizing agent**				
	(a) Ordinary portland cement	t	0.5		
35.04	**Provision and application of water for curing**	kl	100		
				TOTAL AMOUNT	

	SECTION: 3600				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
36.00	**CRUSHED-STONE BASE:**				
36.01	**Crushed-stone base:**				
	(c) Constructed from type G2 natural material obtained from commercial sources 38mm nom. max. stone size) and compacted to:				
	(i) 85% of bulk relative density (150 mm layer thickness)	m^3	100		
	(e) Constructed from type G3 natural material obtained from commercial sources 38mm nom. max. stone size) and compacted to:				
	(i) 98% of modified AASHTO density				
	1) 150mm layer thickness	m^3	100		
	2) 200mm layer thickness	m^3	100		
	(g) Constructed from type G3 natural material obtained from commercial sources (28mm nom. max. stone size) and compacted to:				
	(i) 98% of modified AASHTO density				
	1) 150mm layer thickness	m^3	100		
	2) 200mm layer thickness	m^3	100		
36.05	**In situ reconstructed uncemented crushed stone base (indicate thickness of crushed stone base in each case)**				
	(b) G2 material, compacted to 85% of bulk relative density				
	(i) 150 mm layer thickness	m^3	100		
	(ii) 200 mm layer thickness	m^3	100		
	(c) G3 material compacted to 98% of modified AASHTO density				
	(i) 150 mm layer thickness	m^3	100		
	(ii) 200 mm layer thickness	m^3	100		
	(d) G3 material compacted to 100% of modified AASHTO density				
	(i) 150 mm layer thickness	m^3	100		
	(ii) 200 mm layer thickness	m^3	100		
36.08	**Extra over item 36.05 for using added crushed stone material:**				
	(b) Material from commercial sources				
	(ii) G2 material	m^3	10		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	(iii) G3 material	m^3	10		
				TOTAL AMOUNT	

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
38.00	**<u>BREAKING UP EXISTING PAVEMENT LAYERS</u>**				
B38.01	**Excavating and removing existing bituminous material (except milled material)**				
	(b) Material to be disposed of with the average depth of excavation				
	(i) Not exceeding 30 mm				
	1. Area up to and including 500m²	m²	300		
	2. Area exceeding 500m²	m²	600		
	(ii) Exceeding 30 mm but not exceeding 60 mm				
	1. Area up to and including 500m²	m²	300		
	2. Area exceeding 500m²	m²	600		
	(iii) Exceeding 60 mm but not exceeding 100 mm				
	1. Area up to and including 500m²	m²	300		
	2. Area exceeding 500m²	m²	600		
	(iv) Exceeding 100 mm				
	1. Area up to and including 500m²	m²	300		
	2. Area exceeding 500m²	m²	600		
B38.02	**Milling out existing bituminous material with an average milling depth:**				
	a) Not exceeding 30mm	m²	5000		
	b) Exceeding 30mm but not exceeding 60mm	m²	10000		
	c) Exceeding 60mm	m²	2000		
B38.03	**Milling out cemented crushed stone** (compressive strength 10 MPa up to and including 20 MPa)				
	a) Average milling depth exceeding 50 mm	m²	5000		
	a) Average milling depth exceeding 50mm but not exceeding 100mm	m²	5000		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	a) Average milling depth exceeding 100 mm	m²	2000		
B38.04	**Excavating and spoiling material from an existing pavement and /or the underlying fill**				
	a) Non - cemented material (granular material)	m³	500		
	b) Cemented material	m³	500		
	c) Cemented crushed stone	m³	500		
38.07	**Extra over items 7.2 and 7.3 for tapering the milled excavation edges or ends**	m³	20		
38.08	**Sawing or cutting of cemented pavement layers**				
	a) Sawing Asphalt	m²	200		
	b) Cutting Asphalt	m²	200		
38.09	**Removing the remaining asphalt from the underlying layer**	m²	500		
38.14	**Providing the milling machine on site**	No.	3		
38.15	**Moving the milling machine for a distance exceeding 1,0km**	No.	3		
				TOTAL AMOUNT	

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
39.00	**<u>PATCHING AND REPAIRING OF EDGE BREAKS</u>**				
39.01	**Sawing asphalt or cemented pavement layers for patching:**				
	(a) Sawing asphalt to an average depth:				
	(i) Not exceeding 50 mm	m²	50		
	(ii) Exceeding 50 mm but not exceeding 100 mm	m²	50		
	(iii) Exceeding 100 mm	m²	50		
B39.02	**Excavation in existing pavements for patching in:**				
	(a) Asphalt layers	m³	30		
	(b) Cemented layers	m³	30		
	(c) Un-stabilised granular layers	m³	30		
39.03	**Backfilling of excavations or patching with:**				

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	(b) Base material (G3 quality) compacted to 98% mod. AASHTO density (300 mm layer) for a patch with a surface area:				
	(i) Not exceeding 5 m2	m^3	20		
	(ii) Exceeding 5 m2 but not exceeding 100 m2	m^3	40		
	(c) Existing subgrade				
	(i) Compacted in 150 mm layers to 100 % of mod. AASHTO density - sand	m^3	30		
	(ii) Compacted in 150 mm layers to 97 % of mod. AASHTO density - gravel	m^3	30		
39.04	**Compacting the floor of excavations for patching**	m^2	300		
39.05	**Cutting back the edges of the existing surfacing for repairing of edge breaks**	m	100		
B39.06	**Spoiling excavated pavement material not required for backfilling**	m^3	30		
B39.07	**Application of waterproofing sealant to asphalt patches ('Coldseal' or similar approved)**	litre	300		
				TOTAL AMOUNT	

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
41.00	**PRIME COAT**				
41.01	**Prime coat**				
	(c) MC-30 cut back bitumen	litre	300		
	(d) MC-70 cut back bitumen	litre	300		
	• Invert bitumen emulsion	litre	300		
				TOTAL AMOUNT	

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
42.00	**ASPHALT BASE AND SURFACING**				
42.01 (01)	**Asphalt base- hand applied (50/70 bitumen, 28mm max. stone)**				
	(a) Continuously graded				
	(1) 75mm minimum thickness	m^2	1000		
	(2) 100mm minimum thickness	m^2	300		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	(3) 150mm minimum thickness	m²	100		
42.01 (02)	**Asphalt base - hand applied (A-H2, 28mm max. stone)**				
	(a) Continuously graded				
	(1) 75mm minimum thickness	m²	1000		
	(2) 100mm minimum thickness	m²	300		
	(3) 150mm minimum thickness	m²	100		
42.01 (03)	**Asphalt base machine applied (50/70 bitumen; 28mm max. aggregate)**				
	(a) Continuously graded				
	(1) 75mm minimum thickness	m²	6000		
	(2) 100mm minimum thickness	m²	2000		
	(3) 150mm minimum thickness	m²	1000		
42.01 (04)	**Asphalt base machine applied (A-H2 modified bitumen)**				
	(a) Continuously graded				
	(1) 75mm minimum thickness	m²	6000		
	(2) 100mm minimum thickness	m²	2000		
	(3) 150mm minimum thickness	m²	1000		
42.01 (05)	**Asphalt base machine applied (A-E2 modified bitumen)**				
	(a) Continuously graded				
	(1) 75mm minimum thickness	m²	6000		
	(2) 100mm minimum thickness	m²	2000		
	(3) 150mm minimum thickness	m²	1000		
42.01 (06)	**Asphalt base machine applied (A-P1 modified bitumen)**				
	(a) Continuously graded				
	(1) 75mm minimum thickness	m²	6000		
	(2) 100mm minimum thickness	m²	2000		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	(3) 150mm minimum thickness	m²	1000		
42.02 (01)	**Asphalt surfacing - hand applied (50/70 bitumen)**				
	(a)(i) Continuously graded - Medium				
	(1) 30mm minimum thickness	m²	500		
	(2) 40mm minimum thickness	m²	1000		
	(3) 50mm minimum thickness	m²	300		
	(4) 60mm minimum thickness	m²	100		
	(a)(ii) Continuously graded Fine				
	(1) 25mm minimum thickness	m²	100		
	(2) 30mm minimum thickness	m²	300		
	(g) Residential Mix hand applied (50/70 bitumen)				
	(i) 10mm residential type hot mix asphalt surfacing (nominal 5.5% bitumen)				
	(1) 25mm minimum thickness	m²	200		
	(2) 30mm minimum thickness	m²	200		
42.02 (03)	**Asphalt surfacing machine applied (50/70 bitumen)**				
	(a) Continuously graded (Medium)				
	(1) 30mm minimum thickness	m²	4000		
	(2) 40mm minimum thickness	m²	4000		
	(3) 50mm minimum thickness	m²	1000		
	(4) 60mm minimum thickness	m²	500		
	(a) Continuously graded (Fine)				
	(1) 25mm minimum thickness	m²	500		
	(2) 30mm minimum thickness	m²	500		
42.02 (04)	**Asphalt surfacing machine applied (A-E2 modified bitumen)**				
	(a) Continuously graded				
	(1) 40mm minimum thickness	m²	4000		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	(2) 50mm minimum thickness	m²	1000		
	(3) 60mm minimum thickness	m²	500		
42.02 (05)	**Asphalt surfacing machine applied (A-P1 modified bitumen)**				
	(a) Continuously graded				
	(1) 40mm minimum thickness	m²	4000		
	(2) 50mm minimum thickness	m²	1000		
	(3) 60mm minimum thickness	m²	500		
42.02 (06)	**Asphalt surfacing machine applied (A-H2 modified bitumen)**				
	(a) Continuously graded				
	(1) 40mm minimum thickness	m²	4000		
	(2) 50mm minimum thickness	m²	1000		
	(3) 60mm minimum thickness	m²	500		
42.02 (07)	**Asphalt surfacing machine applied (A-R1 modified bitumen)**				
	(a)Continuously graded (14mm max aggregate)				
	(1) 40mm minimum thickness	m²	4000		
	(2) 50mm minimum thickness	m²	1000		
	(3) 60mm minimum thickness	m²	500		
42.02 (08)	**Residential Mix machine applied (50/70 bitumen)**				
	(i) 10mm residential type hot mix asphalt surfacing (nominal 5.5% bitumen)				
	(1) 25mm minimum thickness	m²	500		
	(2) 30mm minimum thickness	m²	500		
B42.04	**Tack coat 30% stable grade emulsion (anionic/cationic)**				
	(a) 30% stable grade emulsion (anionic/cationic)	litre	2000		
	(b) Polymer modified bitumen emulsion	litre	200		
42.05	**Binder variations:**				
	(1) 35/50 penetration grade bitumen	ton	20		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	(2) 50/70 penetration grade bitumen	ton	20		
	(3) 70/100 penetration grade bitumen	ton	20		
	Binder modifier variations:				
	(4) A-E2 (Styrene-butadiene-styrene (SBS)) modified bitumen	ton	20		
	(5) A-P1 (Ethyl Vinyl Acetate (EVA)) modified bitumen	ton	20		
	(6) A-H2 (FT Paraffin Wax (Sasobil® or similar approved)) modified bitumen	ton	20		
	(7) A-R1 (Rubber) modified bitumen	ton	20		
42.08	**Cores in asphalt paving**				
	(a) 100mm diameter	No	20		
42.09	**Asphalt surfacing on bridge decks**				
	(a) Continuously graded (medium)	ton	20		
42.15	**Application of prime coat and / or tack coat to edges of a layer**	litre	10		
42.17	**Asphalt reinforcing complete**				
	(a) Glasgrid (ref. 8550; 55 kN/m x 55 kN/m)	m^2	100		
	(b) Glasgrid (ref. 8511; 115 kN/m x 115 kN/m)	m^2	100		
	(c) Glasgrid (ref. 8512; 115 kN/m x 215 kN/m)	m^2	100		
	(d) Sealgrid (Kaytech or similar approved 50 x 50 kN/m)	m^2	100		
	(e) Sealgrid (Kaytech or similar approved 100 x 100 kN/m)	m^2	100		
42.20	**Extra Over for backfilling of excavations for patching:**				
	(a) Asphalt base	ton	20		
	(b) Asphalt surfacing	ton	20		
				TOTAL AMOUNT	

	SECTION: 4400				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
44.00	**SEALS**				
44.01	a) **Single seals** with Grade 1, 4.75 mm aggregate using:				
	i) 80/100 bitumen	m²	5000		
	ii) Cationic 65% Spray Grade emulsion	m²	5000		
	iii) S-E1 or E2 Bitumen	m²	5000		
	b) Single seal with Grade 1, 6.7mm aggregate using:				
	i) 80/100 bitumen	m²	5000		
	ii) Cationic 65% Spray Grade emulsion	m²	5000		
	iii) S-E1 or E2 Bitumen	m²	5000		
	c) Single seal with Grade 1, 9.5mm aggregate using:				
	i) 80/100 bitumen	m²	5000		
	ii) Cationic 65% Spray Grade emulsion	m²	5000		
	iii) S-E1 or E2 Bitumen	m²	5000		
44.02	**Bituminous binder variations:**				
	b) 80/100 bitumen	litre	100		
	d) Cationic 65% Spray Grade emulsion	litre	100		
	i) S-E1 or E2 Bitumen	litre	100		
44.03	**Aggregate variations** (state grade) (Grade 1)				
	e) 4.75mm aggregate	m³	10		
	d) 6.7mm aggregate	m³	10		
	c) 9.5mm aggregate	m³	10		
44.04	**Application of fog spray**				
	a) Anionic 60% Spray Grade Emulsion	litre	600		
	b) Anionic 30% Spray Grade Emulsion	litre	600		
	c) MSP 3 or similar approved	litre	600		
44.05	**Precoating the aggregate at a rate of 12litre/m² or as specified** (indicate precoating fluid) (Colkote S or similar)	m³	50		

44.07	**Aggregate for blinding**				
	a) Natural sand	m^3	50		
	b) Crusher sand	m^3	50		
				TOTAL AMOUNT	

	SECTION: 4500				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
45.00	**SEALS continued**				
45.01	**Double seal using:**				
	c) Grade 1, 13.2mm and 6.7mm aggregate using:				
	i) 80/100 bitumen	m^2	5000		
	ii) Cationic 65% Spray Grade emulsion	m^2	5000		
	iii) S-E1 or E2 Bitumen	m^2	5000		
45.02	**Bituminous binder variations**				
	b) 80/100 bitumen	litre	100		
	d) Cationic 65% Spray Grade emulsion	litre	100		
	i) S-E1 or E2 Bitumen	litre	100		
45.03	**Aggregate variations** (state grade) (Grade 1)				
	b) 13.2mm aggregate	m^3	10		
	d) 6.7mm aggregate	m^3	10		
45.04	**Application of fog spray consisting of:**				
	a) Anionic 60% Spray Grade Emulsion	litre	600		
	b) Anionic 30% Spray Grade Emulsion	litre	600		
	c) MSP 3 or similar approved	litre	600		
45.05	**Precoating the aggregate** (indicate precoating fluid) at a rate of 12 litre/m^2(Colkote S or similar)	m^3	500		
				TOTAL AMOUNT	

	SECTION: 4600				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
46.00	**BITUMINOUS SINGLE SEAL WITH SLURRY (CAPE SEAL)**				
46.02	**Bituminous single seal with Grade 1, 13.2 mm aggregate and slurry**				
	i) 80/100 bitumen	m^2	5000		
	ii) Cationic 65% Spray Grade emulsion	m^2	5000		
	iii) S-E1 or E2 Bitumen	m^2	5000		
46.03	**Bituminous binder variations:**				
	b) 80/100 bitumen	litre	600		
	d) Cationic 65% Spray Grade emulsion	litre	600		
	i) S-E1 or E2 Bitumen	litre	600		
46.04	**Aggregate variations (Grade 1)**				
	a) 13.2mm aggregate	m^3	50		
				TOTAL AMOUNT	

	SECTION: 4800				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
48.00	**TREATMENT OF AN EXISTING SURFACE EXHIBITING CERTAIN DEFECTS**				
48.03	**Slurry seal:**				
	a) Tack coat using 30% bitumen emulsion	litre	1200		
	b)Fine (fine) slurry applied by hand	m^3	40		
	c) Medium (fine) slurry applied by hand	m^3	40		
	d) Fine (fine) slurry applied by spreader box	m^3	40		
	e) Medium (fine) slurry applied by spreader box	m^3	40		
	CRACKSEALING				
48.06	**Cleaning of cracks with compressed air**	m	400		
48.07	**Applying bituminous binders and herbicides for sealing cracks:**				

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	a) Herbicide	l	45		
	b) MSP1 or similar approved	l	200		
	c) MSP3 or similar approved rejuvenator	l	200		
	d) Hot Bitumen Rubber	l	200		
	e) Polymer modified bitumen (SBS)	l	200		
	e) Polymer modified bitumen emulsion (SBR)	l	200		
48.08	**Cold rubber-slurry mix for sealing cracks:**	m^3	15		
48.09	**Rolling the cracks**	m	400		
B48.14	**Applying Bandage for Crack Sealing**				
	a) SealMac or similar approved (width of 200mm or less)	m^2	100		
	b) SealMac or similar approved (width more than 200mm)	m^2	100		
	c) U24 Geofabric or similar approved (width of 200mm or less)	m^2	100		
	d) U24 Geofabric or similar approved (width more than 200mm)	m^2	100		
				TOTAL AMOUNT	

	SECTION: 5100				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
51.00	**PITCING, STONEWORK AND PROTECTION AGAINST EROSION**				
51.01	**Stone pitching:**				
	a) Plain pitching:				
	i) Method 1				
	b) Grouted stone pitching	m^2	80		
	c) Grouted stone pitching on a concrete bed (total thickness indicated)	m^2	80		
51.02	**Riprap:**				
	a) Packed riprap (stone indicated)	m^3	50		
51.03	**Stone masonry walls:**				
	a) Plain packed stone walls	m^3	30		
	b) Cemented-mortared stone walls	m^3	30		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
51.04	**Concrete pitching and block paving**				
	a) Cast in situ concrete pitching	m^2	100		
	b) Segmental block paving	m^2	1000		
	c) Prefabricated concrete grass blocks	m^2	1000		
	d) Prefabricated concrete paving blocks of sidewalk pavement	m^2	1000		
51.05	**Concrete edge beams**	m^3	30		
				TOTAL AMOUNT	

	SECTION: 5200				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
52.00	**GABIONS AND PITCHING**				
52.01	**Foundation trench excavation and backfilling:**				
	b) In all other classes of material	m^3	500		
52.02	**Surface preparation for bedding of gabions:**				
	a) Cavities filled with approved excavated material.	m^2	200		
	b) 20Mpa concrete blinding layer 75mm thick	m^2	200		
52.03	**Gabions:** (See drawing WCS/52/1/C1)				
	a) Galvanized gabion boxes (80mm x 100mm) from 2.7mm diameter wire				
	i)1.0m x 1.0m x 1.0m	m^3	200		
	ii) 2.0m x 1.0m x 1.0m	m^3	800		
	iii) 1.0mx1.0mx0.5m	m^3	200		
	iv) 2.0mx1.0mx0.5m	m^3	200		
	b) PVC-coated gabion boxes (80mm x 100mm) from 2.7mm diameter wire				
	i)1.0m x 1.0m x 1.0m	m^3	200		
	ii) 2.0m x 1.0m x 1.0m	m^3	800		
	iii) 1.0mx1.0mx0.5m	m^3	200		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
	iv) 2.0mx1.0mx0.5m	m^3	200		
	c) Galvanized gabion mattresses (80mm x 100mm) from 2.7mm diameter wire				
	i) 2.0mx1.0mx0.3m	m^3	400		
	ii) 6.0mx2.0mx0.3m	m^3	400		
	d) PVC-coated gabion mattresses (80mm x 100mm) from 2.7mm diameter wire				
	i) 2.0mx1.0mx0.3m	m^3	400		
	ii) 6.0mx2.0mx0.3m	m^3	400		
52.04	**Filter fabric** Geotextile				
	a) Grade 1 needle punched non-woven Filter fabric	m^2	1000		
				TOTAL AMOUNT	

	SECTION: 5400				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
54.00	**<u>GUARDRAILS</u>**				
54.01	**Guardrails on timber posts:**				
	a) Galvanized	m	50		
54.03	**Extra over items 54.01 and 54.02 and 54.11 for horizontally curved guardrails factory bent to a radius of less than 45 m**	m	50		
54.04	**End treatments:**				
	a) End wings	No	6		
	b) Bull noses	No	6		
	c) Bridge adaptors	No	3		
54.05	**Additional guardrail posts:**				
	a) Timber	No	10		
54.07	**Removing existing guardrails**	m	50		
				TOTAL AMOUNT	

	SECTION: 5700				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
57.00	**ROADMARKING**				
57.01	**Road marking paint**				
	a) White lines (broken or unbroken) 100mm wide	m	500		
	a) White lines (broken or unbroken) 200mm wide	m	50		
	a) White lines (broken or unbroken) 300mm wide	m	50		
	b) Yellow lines(broken or unbroken) 100mm wide	m	300		
	c) Red lines (broken or unbroken) 100mm wide	m	200		
	c) Red lines (broken or unbroken) 150mm wide	m	50		
	d)White lettering and symbols	m²	50		
	e)Yellow lettering and symbols	m²	50		
	f)Transverse lines, painted island and arrestor bed markings	m²	50		
	j) Speed hump painting	m²	50		
	(i)1.25m STOP & 300 & 100mm lines	No	10		
	(ii) 2.5m STOP & 300 & 100mm lines	No	10		
57.02	**Retro-reflective road-marking paint:**				
	a) White lines (broken or unbroken) 100mm wide	m	500		
	a) White lines (broken or unbroken) 200mm wide	m	50		
	a) White lines (broken or unbroken) 300mm wide	m	50		
	b) Yellow lines (broken or unbroken) 100mm wide	m	300		
	c) Red lines (broken or unbroken) 100mm wide	m	200		
	c) Red lines (broken or unbroken) 150mm wide	m	50		
	d)White lettering and symbols	m²	50		
	e)Yellow lettering and symbols	m²	50		
	f)Transverse lines, painted island and arrestor bed markings	m²	50		
	j) Speed hump painting	m²	50		
	(i)1.25m STOP & 300 & 100mm lines	No	10		
	(ii) 2.5m STOP & 300 & 100mm lines	No	10		

ITEM	DESCRIPTION	UNIT	Quantity	Rate	Amount
57.06	**Setting out and Pre-marking (excluding traffic island markings, lettering and symbols)**				
	a) Lines	km	10		
B57.08	**Removal of existing , temporary and permanent road marking by sandblasting (include viaseal application)**				
	Clean and paint kerbs				
	a)White	m	50		
	b)Yellow	m	50		
	c)Red	m	50		
	d)Black	m	50		
				TOTAL AMOUNT	

	SECTION: 5800				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
58.00	**<u>LANDSCAPING AND PLANTING PLANTS</u>**				
58.03	**Preparing the areas for grassing:**				
	a) Ripping	ha	0.4		
	b) Scarifying for loosening topsoil	ha	0.4		
58.04	**Grassing:**				
	c) Hydro seeding:				
	i) Providing an approved seed mixture for hydro seeding	kg	200		
	ii) Providing an approved mulch	kg	200		
				TOTAL AMOUNT	

	SECTION: 7300				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
73.00	**CONCRETE BLOCK PAVING FOR ROADS**				
73.01	**Concrete Block paving**				
	Grey Colour, 80mm thick, Class 35, Type S-A	m²	5000		
B73.04	**Clay pavers for roadways and sidewalks**				
	a) Clay brick pavers - De Hoop Red, 50mm thick	m²	500		
	b) Clay brick paver – Autumn Paver, 50mm thick	m²	500		
	c) Clay brick pavers - De Hoop Red, 35Mpa 73mm thick	m²	500		
	d) Clay brick paver – Autumn Paver, Heavy Duty, 73mm thick	m²	500		
	e) Tactile paving as per SANS 784 2008				
	(i) Warning indicator pattern	m²	200		
	(ii) Directional indicator	m²	200		
B73.05	**Remove segmented paving units from roadways and sidewalks**				
	a) To spoil or stockpile on site	m²	500		
	b) Relay existing pavers	m²	500		
B73.09	**Stone Pitching**				
	a) Plain Stone Pitching 200mm thick	m²	500		
	b) Grouted stone pitching on a 75mm concrete bed	m²	500		
				TOTAL AMOUNT	

	SECTION: 7400				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
74.00	**EARTH RETAINING SYSTEMS**				
74.01	**Patented earth retaining systems:**				
	a) Loffelstein vertical precasts concrete block type L500	m²	200		
74.02	**Excavation for concrete bases for earth retaining systems**				
	a) in soft material	m³	40		
74.03	**20MPa Concrete bases for earth retaining systems**	m³	40		
				TOTAL AMOUNT	

	SECTION: C1000				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
C10.00	**ENVIRONMENTAL MANAGEMENT**				
C10.01	**The contractor's obligations in respect ironmental management**				
	(a) Designated environmental officer (DEO)				
	(1) Minor Works with value <R200 000	day	40		
	(2) Works with value R200 000 – R600 000	day	30		
	(3) Works with value >R600 000	day	50		
	(b) Environmental aspects and impact				
	(1) Minor Works with value <R200 000	day	40		
	(2) Works with value R200 000 – R600 000	day	30		
	(3) Works with value >R600 000	day	50		
				TOTAL AMOUNT	

	SECTION: C1100				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
C1100	**COLD IN-SITU STABILISATION WITH A NANO-ODIFIED EMULSION (NME) STABILISING AGENT**				
C11.01	(a) Establishment of cold in-situ recycling equipment/plant on site	Lump Sum	1		
	(b) Establishment of Conventional equipment on site	Lump Sum	1		
C11.02	**Cold in-situ recycled granular layer treated**				
	(a) Using a recycler				
	(1) Base layer (150mm) compacted to 100% Mod AASHTO density using a Nano-modified (bitumen) emulsion (NME).	m³	40		
	(2) Sub-base (150mm) compacted to 95% or 97% Mod AASHTO density) using a Nanc Modified (bitumen) emulsion (NME)	m³	30		
	(b) Using conventional plant				
	(1) Base layer (150mm) compacted	m³	30		

	to 100% Mod AASHTO density using a Nano-modified (bitumen) emulsion (NME).				
	(2) Sub-base (150mm) compacted to 95% or 97% Mod AASHTO density) using a Nano-Modified (bitumen) emulsion (NME)	m³	30		
C11.03	**NANO-MODIFIED BITUMEN EMULSION**	litre	500		
C11.06	**Blading of surplus material to windrow**	m³	30		
C11.07	**Removal from site of surplus material**	m³	20		
C11.08	**Construction of temporary wearing course**	m²	200		
C11.09	**Trial sections were ordered (extra over item C11.02 and C11.03)**	m²	200		
C11.10	**Extra over Item C10.02 for adding extra material to the layer**				
	(a) Gravel Base (G2)	m³	30		
	(b) Gravel sub base (G5)	m³	30		
	(c) RA	m³	20		
C11.11	**Milling out existing bituminous material with average milling depth:**				
	(a) Not exceeding 30mm	m³	50		
	(b) Exceeding 30mm but not exceeding 60mm	m³	50		
	(c) Exceeding 60mm	m³	30		
C11.12	**Providing the milling machine on the site**	No	1		
C11.13	**Break down of in-situ material**	m³	50		
				TOTAL AMOUNT	

	SECTION: D1000				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
SECTION D1000					
D10.00	**LABOUR-BASED WORK AND TRAINI REQUIREMENTS**				
D10.01	**Community participation:**				
	(a) Cost of community participation and public liaison	Provisio sum	10 000		
	(b) Handling costs and profit in respect of sub-item (a)	Percent (%)	10		
D10.02	**Training**				
	(a) Cost to company of temporary local labourers for off-site training during which no productive work is executed	Provisio sum	10 000		
	(b) Formal training courses for temporary local labourers	Prime co Sum	5000		
	(c) Contractor's charges to allow for handling cost and profit in respect of subitem (b)	Percent (%)	10		
D10.03	**The contractor's obligation in respect of managing a team of 6 local labours**				
	(a) Minor Works with value <R200 000	day	10		

	(b) Works with value R200 000 – R600 000	day	30		
	(c) Works with value >R600 000	day	50		
				TOTAL AMOUNT	

	SECTION: E1000				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
E10.00	**COLD INSITU RECYCLING (CIR)**				
E10.01	**Cold insitu recycled granular / crushed-stone layer (modified / stabilized) compacted to 98% of modified AASHTO density**				
	a) 150mm depth	m^3	150		
	b) 200mm depth	m^3	100		
	c) 250mm depth	m^3	100		
E10.02	**Bituminous stabilizing agents**				
	a) Anionic 60% stable grade bitumen emulsion	/litre	500		
	b) Cationic 65% stable grade bitumen emulsion	/litre	500		
E10.03	**Additives for bituminous stabilization**				
	a) Portland Cement (CEM II -32,5N)	tonne	1		
	b) Road lime	tonne	1		
E10.04	**Blading of surplus material to windrow**	m^3	200		
E10.05	**Removal from site of surplus material**	m^3	100		
E10.06	**Slushing of recycled granular base as specified in C6(i) using the following method:**				
	a) Method 1	m^2	1000		
	b) Method 2	m^2	1000		
E10.07	**Trial section where ordered**				
E10.08	**Ripping of pavement layers as specified in clause C6(b)**				
	a) 150mm	m^2	1000		
	b) 250mm	m^2	1000		
E10.09	**Extra over item 5.2 for static rolling**	m^2	1000		
E10.10	**Extra over item 5.2 for adding material from commercial sources**				
	a) G2 crushed –stone	m^3	50		
				TOTAL AMOUNT	

	SECTION: E2000				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
E20.00	**SPEED HUMPS AND RAISED PEDESTRIAN CROSSING**				
E20.01	Remove existing speed hump and / or raised pedestrian crossing at the location indicated by the Municipal Official	m^3	5		
E20.02	Provide new speed hump in accordance with Drawing SR23 at the location indicated by the Municipal Official	m^3	5		
E20.03	Provide new raised pedestrian crossing in accordance with Drawing SR24 at the location indicated by the Municipal Official	m^3	5		
				TOTAL AMOUNT	

	SECTION: E3000				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
E30.00	**ULTRA THIN ASPHALT**				
E30.01	Ultra Thin asphalt surfacing	m²	5000		
E30.02	Extra over for average thickness exceeding the maximum	ton	20		
E30.03	Extra over for leveling layers / Scratch coats ordered by Engineer	ton	20		
E30.04	Tack coat	m²	5000		
E30.05	**UTFC (Ultra thin friction course)**				
	a) 20mm thick, 13mm stone size UTFC	m²	5000		
	b) 18mm thick 9mm stone size UTFC	m²	5000		
				TOTAL AMOUNT	

	SECTION: E4000				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
E40.00	**COMMUNITY BASED ASPHALT MANUFACTURE AND PLACEMENT**				
E40.01	Manufacture and place **Continuous Graded Fine Asphalt** , incorporating Labour Based Surfacing (LBS) filler (25mm thick)	m²	5000		
E40.02	Manufacture and place **Continuous Graded Medium Asphalt**, incorporating LBS filler (30mm thick)	m²	5000		
E40.03	Manufacture and place **LBS Slurry**, incorporating LBS filler	m²	5000		
E40.04	Manufacture and place **Emulsion Treated Base** , incorporating LBS Filler (50mm thick)	m²	5000		
				TOTAL AMOUNT	

	SECTION: E5000				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
E50.00	**CONTRACTOR'S OBLIGATIONS IN RESPECT OF MANAGING A DEVELOPING SUB-CONTRACTOR**				
E50.01	Subcontracting - Minor Works with value <R200 000	day	10		
E50.02	Subcontracting - Works with value <R200 000 – R600 000	day	30		
				TOTAL AMOUNT	

	SECTION: F1000				
ITEM	**DESCRIPTION**	**UNIT**	**Quantity**	**Rate**	**Amount**
F10.00	**HEALTH AND SAFETY REQUIREMENTS**				
F10.01	**Contractor's obligations in respect of Health and Safety**				
	(a) Works with value >R1 million	day	50		
	(b) Minor Works with value <R1 million	day	10		
				TOTAL AMOUNT	

SUMMARY PAGE

SECTION	DESCRIPTION	AMOUNT
1300	CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS	
1500	ACCOMODATION OF TRAFFIC	
1600	OVERHAUL	
1700	CLEARING AND GRUBBING	
2100	SUBSURFACE DRAINS	
2200	PREFABRICATED CULVERTS	
2300	CONCRETE KERBING, CONCRETE CHANNELLING, CHUTES AND DOWNPIPES, AND CONCRETE LININGS FOR OPEN DRAINS.	
3300	MASS EARTHWORKS	
3400	PAVEMENT LAYERS OF GRAVEL MATERIAL	
3500	STABILIZATION	
3600	CRUSHED-STONE BASE:	
3800	BREAKING UP EXISTING PAVEMENT LAYERS	
3900	PATCHING AND REPAIRING OF EDGE BREAKS	
4100	PRIME COAT	
4200	ASPHALT BASE AND SURFACING	
4400	SEALS (SINGLE)	
4500	SEALS (DOUBLE)	
4600	BITUMINOUS SINGLE SEAL WITH SLURRY (CAPE SEAL)	
4800	TREATMENT OF AN EXISTING SURFACE EXHIBITING CERTAIN DEFECTS	
5100	PITCING, STONEWORK AND PROTECTION AGAINST EROSION	
5200	GABIONS AND PITCHING	
5400	GUARDRAILS	
5700	ROAD MARKING	
5800	LANDSCAPING AND PLANTING PLANTS	
7300	CONCRETE BLOCK PAVING FOR ROADS	
7400	EARTH RETAINING SYSTEMS	
C1000	ENVIRONMENTAL MANAGEMENT	
C1100	COLD IN-SITU STABILISATION WITH A NANO-MODIFIED EMULSION (NME) STABILISING AGENT	
D1000	LABOUR-BASED WORK AND TRAINING REQUIREMENTS	
E1000	COLD INSITU RECYCLING (CIR)	
E2000	SPEED HUMPS AND RAISED PEDESTRIAN CROSSING	
E3000	ULTRA THIN ASPHALT	
E4000	COMMUNITY BASED ASPHALT MANUFACTURE AND PLACEMENT	
E5000	CONTRACTOR'S OBLIGATIONS IN RESPECT OF MANAGING A DEVELOPING SUB-CONTRACTOR	
F1000	HEALTH AND SAFETY REQUIREMENTS	
	SUB-TOTAL 1	
	ADD 10% CONTINGENCIES	
	SUB-TOTAL 2	
	ADD 15% VAT	
	GRAND TOTAL	

Part C3: Scope of Work

Pages

C3.1 Description of the Works

CONTENTS

1 EMPLOYER'S OBJECTIVES

The Employer's objectives are to undertake roads and sidewalks rehabilitation and resurfacing as well as remediation works for stormwater facilities within the Dihlabeng Municipal Area. The Municipality will, compile a Works Project Specifications and compile a bill of quantities for a Specific Work Assignment / Package / Work Assignment / Package. Works will be carried out at the tendered rates provided by the Contractor in the Schedule of Rates. This contract will expire 36 months from date of award.

A minor Work Assignment / Package is defined a works that have an estimated value of less than R1 Million.

The description of the project contained in the Scope of Work is merely an outline of the Contract Works and shall not limit the work to be carried out by the Contractor under this Contract. Details of some of the major items are given in this section and approximate detailed quantities for each type of work to be carried out in accordance with the Contract Documents are included in the Bill of Quantities.

2 OVERVIEW OF THE WORKS

2.1 General Description

This tender involves the rehabilitation and resurfacing of roads and sidewalks as well as remediation works for stormwater facilities as and when required by the Municipality.

A general description for each Work Assignment / Packages will be provided for in a Works Project Specification.

General work items under this contract shall include any one or more of the following:

i) Establishment on Site.
ii) Accommodation of traffic.
iii) Installation of subsurface drains.
iv) Construction of kerb and channel, stormwater catchpits, pipes and manholes.
v) In-situ recycling of existing pavements layers.
vi) Milling and removal of existing bituminous surfacing layers.
vii) Placing of new bituminous surfacing layers.
viii) Placing of pavers.
ix) Application of road marking.
x) Ancillary works.

2.2 Boundaries of the site

The successful tenderer(s) will be required to work in road reserve, within the boundaries of the Dihlabeng Municipal Area. The construction areas will be pointed out by the authorized Municipal Official as and when required.

2.3 Occupation of the site

Access to the site will be given to the Contractor on the Commencement Date of a Work Assignment / Package.

The site of the works is on public open space and public roads, which will remain in use during the course of the work. No road may be closed and traffic shall be accommodated as shown on the drawings.

3. EXTENT OF THE WORKS

The location and extent of works for each Work Assignment / Package will be provided. Work that is to be carried out under the contract is as provided for in the bill of quantities. However, if during the course of construction conditions are found to differ from those anticipated, the Municipality reserves the right to modify the extent of the work to suit the prevailing conditions and circumstances. Variations introduced in this manner will be measured and paid for at the rates tendered for appropriate items listed elsewhere in the schedule of quantities or in the absence of such rates, as extra work.

The work to be undertaken by the Contractor shall include the following:

General:

(i) The establishment on site of the Contractor's campsite.
(ii) The supply of plant, labour, tools, equipment and materials necessary to complete the work.
(iii) Setting out of the works.
(iv) Accommodation of traffic.

Roadworks:

The roadworks included under this contract consists mainly of the following:

i) Installation of subsurface drains.
ii) Construction of kerb and channel, stormwater catchpits, pipes and manholes.
iii) Insitu recycling of existing pavements layers.
iv) Milling and removal of existing bituminous surfacing layers.
v) Placing of new bituminous surfacing layers.
vi) Placing of pavers.
vii) Application of road marking.
viii) Ancillary works.

4. CONTRACTOR'S CAMP SITE, POWER SUPPLY AND OTHER SERVICES

The Municipal will identify an area that can be used as a camp site. For minor works a campsite shall be fenced off and comprise of a sheltered area that can be used by workers as a rest area, a mobile toilet and an area to stockpile materials. For all other works a campsite shall be fenced off and comprise of a container (to be utilized contractors office), ablution facilities, a sheltered area for workers and an area to stockpile materials. The Contractor is responsible for making all the necessary arrangements for the acquisition, establishment and subsequent removal and reinstatement of his camp site. He is responsible for ensuring that the requirements of the relevant land owner and all competent authorities having powers of sanction over the area on which the camp site is established are met. The final location and layout of the camp site shall be approved by the Municipality before establishment commences.

The contractor shall make his own arrangements concerning the provision of water, electricity and other services for the campsite and office facilities.

No direct payment will be made for the provision of electrical and other services. The cost thereof shall be deemed to be included in the rates and amounts tendered for the various items of work for which these services are required.

5. CONSTRUCTION IN CONFINED AREAS

It will be necessary for the Contractor to work within confined and restricted areas. No additional payment will be made for work done in such areas, despite indications to the contrary in the Standard Specifications.

6. WATER FOR CONSTRUCTION PURPOSES

The Contractor must make adequate provision in his tender for all negotiations and procurement of water for construction activities and all related costs will be deemed to be included in his tendered rates.

7. WAYLEAVES AND PERMITS

The Contractor shall be responsible for ensuring that he obtains all wayleaves and permits from the relevant service authorities for working over, under or near services. In order to facilitate such approval the Employer will provide all available details, plans and drawings of the services on the site to the Contractor. The Employer will assist the Contractor to obtain necessary wayleaves, however this will not limit the Contractor's obligations in terms of the Contract, to comply with the provisions or by-laws of any local statutory body.

8. EXISTING SERVICES

Before the Contractor commences operations, he must discuss with and have the approval of the Employer, authority or owner concerned regarding the method he proposes to use for relocating or safe-guarding any services and existing works he may encounter during construction.

Any details of existing services shown on drawings may not be accurate therefore, where required, the Contractor shall arrange with authority concerned to point out services on site.

The Contractor shall locate all known services and safeguard any existing services or works he locates or may encounter during construction. The Contractor shall obtain clearance from the authority concerned before commencement of work in the proximity of the existing services.

The Contractor shall be responsible for any damage to such existing services or existing works in the execution of this contract and shall reimburse the Employer, authority or the owner concerned for any repairs required or damages incurred.

The Contractor shall be responsible for immediately notifying the Employer and the authorities concerned regarding and damage caused to public services and existing works.

Any alteration to public services shall be carried out by the Authority concerned unless the Contractor is instructed otherwise.

The Contractor shall provide the necessary assistance during any operations necessary in connection with the removal, alteration or safeguarding of any public service.

The Contractor is not permitted to cut off and roots from protected vegetation or tree roots which may cause the trees to become unstable, before consulting the local Green Services authority.

The Contractor shall assume full responsibility where any person in his service either directly or indirectly causes and damage to known services. The Contractor shall bear the cost of repair of any such damage.

9. ACCOMMODATION OF TRAFFIC

Work, including the erection and removal of traffic control facilities, shall be executed, where possible, between sunrise and sunset on Mondays to Saturday, inclusive. Occupation of existing traffic lanes will only be allowed during daylight hours on normal working days, which are defined as Monday to Saturday, inclusive. The existing number of lanes for each traffic movement affected by construction shall not be reduced without the written authorization of the Employer.

The traveling public has the right of way on public roads, and the Contractor shall make use of approved methods to control the movement of his equipment and vehicles so as not to constitute a hazard on public roads.

Failure to maintain road signs, warning signs or flicker lights, ect, in good condition shall constitute ample reason for the Employer to bring the works to a stop until the road signs, etc, has been repaired to his/her satisfaction.

The Contractor may not commence constructional activities before adequate provision has been made to accommodate traffic in accordance with the requirements of these specifications and Chapter 13 of Volume 2 of the South African Road Traffic Signs Manual (SARTSM).

The Contractor shall submit proposals in connection with all signs and accommodation of traffic to the Employer for approval.

The traffic shall be accommodated on the existing surfaced carriageway and shoulders. No bypasses or temporary deviations shall be constructed. Accommodation of traffic will generally be carried out by closing off one lane of traffic at a time and accommodating the traffic on the other lane(s). During non-working days and the December - January break, the contractor will be required to shut down normal construction activities and ensure that the total surfaced width is available to public traffic. Only emergency work will be allowed. Where necessary, the traffic safety officer will be required to patrol during these non-workingperiods and ensure that all temporary traffic-control facilities are in place and functional. Theaccommodation of traffic team will be required to be on standby.

The penalty, for each incident or event that deviates from the approved Traffic Accommodation Plans, shall be separately determined for each Work Assignment / Package.

10. UNBUNDLING OF MUNICIPAL INFRASTRUCTURE ASSETS

The unbundling or componentization of the Property, Plant and Equipment (PPE) assets is required to update the Fixed Asset Register (FAR) as well as for effective asset maintenance and provision of services. The FAR will annually be updated for all assets and components. All new assets to be recorded on the FAR would there for have to be unbundled into its constituent components and all components be recorded on the FAR under the parent asset. The unbundling of primary assets into secondary components will be to a level that is sufficient for GRAP 17 compliance. Generally, the componentization of the PPE assets will be based on the component value, type of component (civil, electrical & mechanical) as well as anticipated lifespan of the component.

The unbundling of projects may only commence once the project is complete, all cost is known, including retention fees, and the following documents are available:

- Final bill of quantities;
- As-built plans;
- Completion certificate; and
- Final payment certificate.

All capital expenditure per project or per capital suspense must be verified in order to ensure that the total expenditure on a project is included, that is professional fees, actual cost, retention fees and all other relevant expenditure.

Once the final cost is determined, then the unbundling of the project commences. The total project cost should be broken down to a component level.

The following information should be provided for each component of the capital asset once the project has been unbundled:

- Asset description;
- Original cost;
- Capital suspense account;
- WIP Asset code;
- Expected useful life;
- Acquisition date (Equal to the date of last expenditure, except retention);
- Start depreciation date;
- Asset Class as per Asset hierarchy

All unbundled capital assets must be captured spatially by geo referencing it in ESRI or Arcmap or a compatible spatial program. In doing so the replaced or upgraded capital assets must be identified.

When a replacement or upgrade is identified, the following information must be provided, the asset code, the portion in units that is replaced or in the case of a complete replacement an indications to this extend.

The GIS layer for as-built plans must be updated independently for the capital asset register layer. All information must be made available in electronic format to the Asset and IT section

Find below list of generic components per asset type is listed below for ROADS, but additional/ special components would however also have to be considered when unbundling assets.

	USEFUL LIFE IN YEARS		
	MIN		MAX
ROADS (Roads, Pavements, Bridges & Storm Water)			
BRIDGES			
Vehicle			
Bridges - Concrete	60	-	80
Bridges - Steel	40	-	50
Bridges - Timber	25	-	40
Pedestrian			
Bridges - Concrete	60	-	80
Bridges – Steel	40	-	50
Bridges – Timber	25	-	40
Railway			
Bridges - Concrete	60	-	80
Bridges – Steel	40	-	50
Bridges - Timber	25	-	40
Reinforced retaining walls			
Earth	10	-	15
Concrete	25	-	30
Expansion and construction joints	15	-	20
STORM WATER			
Culverts	25	-	40
Concrete	40	-	60
Armco	25	-	40
Drains			
Earthworks	80	-	100
Concrete lining	25	-	50
Stop banks	40	-	50
Pipes	25	-	50
Coastal			
Structure (Retaining walls)	20	-	40
Piers	60	-	80
Storm water outfalls	60	-	80

ROADS			
Kerb and channels	40	-	50
Municipal roads - Asphalt surface	10	-	20
- Asphalt layer	30	-	50
- Concrete surface	10	-	30
- Concrete layer	30	-	50
- Gravel surface	3	-	10
National roads - Asphalt surface	10	-	20
- Asphalt layer	30	-	50
- Concrete surface	10	-	30
- Concrete layer	30	-	50
- Gravel surface	3	-	10
Provincial roads - Asphalt surface	10	-	20
- Asphalt layer	30	-	50
- Concrete surface	10	-	30

	USEFUL LIFE IN YEARS		
	MIN		MAX
- Concrete layer	30	-	50
- Gravel surface	3	-	10
Crash barriers	10	-	30
Retaining walls	30	-	60
Overload control centres	15	-	20
Electronic hardware	10	-	15
Other equipment	10	-	20
Pedestrian footpaths	15	-	30
Street lighting	25	-	40
Subways	40	-	50
Traffic islands	40	-	50
Traffic lights	15	-	20
Traffic lights – coastal	10	-	15
Traffic signs	5	-	15
Toll road plazas	20	-	30

C3.2 Engineering Drawings

The work shall be carried out in accordance with these standard drawings which are available on the Municipality's website, under the following folders: Documents, Municipal Policies, Engineering Services, Design Guidelines.

LIST OF DRAWINGS:

RST 001:	PROJECT NAME BOARD
RST 002:	HEADWALL: TYPE 1
RST 003:	CATCHPIT: TYPE A – PLAN (1 OF 3)
RST 004:	CATCHPIT: TYPE A – SECTION A-A (2 OF 3)
RST 005:	CATCHPIT: TYPE A – SECTION B-B (3 OF 3)
RST 006:	SLAB COVER
RST 007:	CATCHPIT: TYPE B – PLAN (1 OF 3)
RST 008:	CATCHPIT: TYPE B – SECTION A-A (2 OF 3)
RST 009:	CATCHPIT: TYPE B – SECTION B-B (3 OF 3)
RST 010:	EARTH SIDE DRAIN (1 OF 2)
RST 011:	EARTH SIDE DRAIN (2 OF 2)
RST 012:	TYPICAL CROSS SECTION OF ROAD
RST 013:	TYPICAL STOP INTERSECTION
RST 014:	MANHOLE FOR SUB SURFACE DRAIN
RST 015:	INLET KERB: TYPE B (1 OF 2)
RST 016:	INLET KERB: TYPE B (2 OF 2)
RST 017:	DOUBLE GULLY GRID CATCHPIT
RST 018:	JUNCTION BOX: TYPE 1 PLAN (1 OF 2)
RST 019:	JUNCTION BOX: TYPE 1 SECTION (2 OF 2)
RST 020:	TYPICAL DETAILS OF CLEANING EYES
RST 021:	BARRIER KERB: TYPE BK2
RST 022:	BARRIER KERB: TYPE BK2 & C1
RST 023:	BARRIER KERB: TYPE CK5
RST 024:	MOUNTABLE KERB: TYPE MK10
RST 025:	MOUNTABLE KERB: TYPE MK7
RST 026:	TRANSITION KERB: BK2 & C1
RST 027:	TRANSITION KERB: MK7-BK2
RST 028:	TRANSITION KERB: MK7-BK2 & C1
RST 029:	
RST 030:	TRANSITION KERB: CK5-BK2 & C1
RST 031:	TRANSITION KERB: CK5-MK10
RST 032:	TYPICAL RAISED PEDESTRIAN CROSSING
RST 033:	TYPICAL SPEED HUMP
RST 034:	PARALLEL PARKING BAYS
RST 035:	ASSEMBLY AND ERECTION OF GABION BOXES
RST 036:	MANHOLE: TYPE C – PLAN (1 OF 2)
RST 037:	MANHOLE: TYPE C – SECTION (2 OF 2)
RST 038:	COVER SLAB: TYPE C

C3.3 Construction Work Specifications

PART A: STANDARD SPECIFICATIONS

Although not bound in nor issued with this document, relevant Standardised Specification for Civil Engineering Construction (SANS) 1200 / 2100 and COLTO Standard Specifications for Road and Bridge Works for State Authorities 1998, as detailed in the Bill of Quantities / Schedule of rates, shall apply

PART B: VARIATIONS TO STANDARDIZED SPECIFICATIONS AND ADDITIONAL CLAUSES

SECTION 1200 : GENERAL REQUIREMENTS AND PROVISIONS

B1229 SABS CEMENT SPECIFICATIONS

- *Add the following:*

"All cement used during construction shall comply with SANS 50197-1 for common cements and sans 50413-1:2004 for masonry cement. Any reference to SABS 471 in the standard specifications shall be replaced with the new specification SANS 50197-1: Cement compositions, specifications and conformity criteria: Part 1: Common cements.

Where the old SABS 471 product nomenclature has been used in the standard specifications, the contractor shall supply and use the relevant new product, in compliance with SANS 50197-1."

- *The following new clauses shall be added after clause 1229 of the specifications:*

B1230 SITE SECURITY

The contractor shall carefully assess the security measures of whatever nature that may be required at the location of the site offices and the site of the works. No direct payment for security measures shall be made and the contractor shall make adequate provision in his tendered rates for all measures, including insurances, deemed necessary by him to safeguard his staff and that of the Engineer, his plant, materials and equipment, the offices of the Engineer complete with furniture, equipment and personal belongings, and to prevent disruption of the works by criminals. No claims in this regard will be entertained.

SECTION 1300 CONTRACTORS ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS

B1302 GENERAL REQUIREMENTS

(a) Camps, constructional plant and testing facilities

- *Add the following to the first paragraph*

The Municipal will identify an area that can be used as a camp site. For minor works a campsite shall be fenced off and comprise of a sheltered area and mobile toilet. For all other works a campsite shall be fenced off and comprise of a container (contractors office), ablution facilities, a sheltered area for workers and an area to stockpile materials.

(c) Legal and contractual requirements and responsibilities to the public

Add the following as a second paragraph

"There has been recent legislation promulgated by Government that imposes mutual obligations on the employer and contractor in the performance of their duties to society and to the built and natural environment. To assist the contractor in understanding and assessing his obligations, and thus to make allowances for the cost of compliance with this legislation, the following additional specifications are included in the project specifications:

(i) Part C of C3.4 Construction of the Scope of Works contains the environmental management plan for this project. Its provisions regulate the contractor's construction methods to ensure responsible conduct and treatment of the environment relevant to the project. No separate payment mechanism has been made

available for the contractor to allow for his compliance with relevant environmental legislation. Separate payment items are included in these provisions. However, non-compliance with these provisions may lead to the imposition of penalties.

(ii) Part D of C3.4 Construction of the Scope of Works contains provisions that regulate the contractor's construction methods for compliance with Government's initiatives towards the use of local labour in construction, black economic empowerment and the use of targeted enterprises and labour (local resources). Separate pay items for labour obligations and training are included in these provisions. However, non-compliance with these provisions may lead to the imposition of penalties.

(iii) Section G of C3.4 Construction of the Scope of Works contains the specification that regulates the contractor's construction methods so far as to ensure health and safety of his employees and of the public. Separate new pay item(s) are included in these provisions to allow the contractor to make separate provision for the cost of health and safety measures during the construction process."

B1303 MEASUREMENT AND PAYMENT

In the 17th paragraph (the fourth last paragraph) under item 13.01 replace the second sentence with the following:

"The tendered rate will be paid monthly, pro rata for parts of a month from the commencement date of the contract in terms of clause 5.2 of the general conditions of contract, until the due completion date as defined in clause 1.1.1.14 of the general conditions of contract, provided that – "

Replace with the following payment items:

Item		Unit
B13.01.01	Road Rehabilitation	
	(a) Fixed obligations	Per Site
	(c) Time-related obligations	Per Day
	(d) Fixed obligations for Minor Works <R1 million	Per Site
	(e) Time-related obligations for Minor Works <R1 million	Per Day
B13.01.02	Resealing of Roads	
	(a) Fixed obligations	Per Site
	(c) Time-related obligations	Per Day
	(d) Fixed obligations for Minor Works <R1 million	Per Site
	(e) Time-related obligations for Minor Works <R1 million	Per Day
B13.01.03	Upgrading of Gravel Roads to Surface Road Standards	
	(a) Fixed obligations	Per Site
	(c) Time-related obligations	Per Day
	(d) Fixed obligations for Minor Works <R1 million	Per Site
	(e) Time-related obligations for Minor Works <R1 million	Per Day
B13.01.04	Construction of Roads and Intersection Improvements	
	(a) Fixed obligations	Per Site
	(c) Time-related obligations	Per Day
	(d) Fixed obligations for Minor Works <R1 million	Per Site
	(e) Time-related obligations for Minor Works <R1 million	Per Day
B13.01.05	Construction of Sidewalks and Pathways	
	(a) Fixed obligations	Per Site
	(c) Time-related obligations	Per Day
	(d) Fixed obligations for Minor Works <R1 million	Per Site
	(e) Time-related obligations for Minor Works <R1 million	Per Day
B13.01.06	Construction of Stormwater Drainage Facilities	
	(a) Fixed obligations	Per Site
	(c) Time-related obligations	Per Day

	(d) Fixed obligations for Minor Works <R1 million	Per Site
	(e) Time-related obligations for Minor Works <R1 million	Per Day
B13.01.07	Ancillary Roadworks and Sundry Structures (Colto Series 5000 and 7000)	
	(a) Fixed obligations	Per Site
	(c) Time-related obligations	Per Day
	(d) Fixed obligations for Minor Works <R1 million	Per Site
	(e) Time-related obligations for Minor Works <R1 million	Per Day
B13.01.08	Extra Over for Items B13.01.02 and B13.01.03 for loss of production, where roadworks can only be carried out, outside of the peak period) between 9:00 and 15:00.	Per Day

The tendered rates shall be the rates per site and rates per day, of the various categories of work as described above, and shall include full compensation for all the contractor's charges in respect of the items, collectively termed the "contractor's general obligations".

- *Add the following item:*

		Unit
B13.02	Contract Signboards	number(No.)

The unit of measurement shall be the number of contract signboards provided in accordance with the drawings and erected at the locations as instructed by the Engineer.

The tendered rate shall include full compensation for procuring and furnishing all materials, and for the manufacturing of the contract signboards complete as specified on the drawings. It shall also include for the delivery and erection of the signs complete as specified at the locations instructed by the Engineer, and for their removal on completion of the contract."

SECTION B1600: OVERHAUL

B1603 MEASUREMENT AND PAYMENT

b) Overhaul

- *Replace the sub-clause with:*

"Regardless that the Standard Specification makes allowance for payment of restricted overhaul, payment shall only be made for material hauled in excess of 5 kilometre. Overhaul shall be measured as the product of the volume of material hauled and the overhauled distance.

d) Free-haul distance

- *Replace the last sentence with:*

"This distance shall be 5 kilometre in the case of all overhaul materials and this specification shall be deemed to have replaced the 'free-haul' distance in all other sections of the standard specifications."

- *Amend item 16.02 as follows:*

"**Item**		**Unit**
B16.02	**Overhaul on material hauled in excess of 5 km .....**	cubic meter - kilometre (m^3km)"

- *Delete the first paragraph of the first set of notes and replace it with the following:*

"Only ordinary overhaul for haul in excess of 5.0 km will apply to all types of fill and layerwork materials. No restricted overhaul will be applicable on this contract."

SECTION 2200: PREFABRICATED CULVERTS

B1700 MEASUREMENT AND PAYMENT

- *Amend item 16.02 as follows:*

"**Item** **Unit**

B17.07 **Cleaning of other constructed surfaced areas.....**cubic meter (m^3)"

The unit of measurement shall be the cubic meter of material removed from a constructed surface area (for example a brick paved or asphalt surface area) where instructed by the engineer so that the surfaced area is cleaned as specified.

The tendered rate shall include full compensation for all work necessary for removing all undesirable materials from structures, transporting and disposing of these materials within a 5 km radius.

2218 MEASUREMENT AND PAYMENT

- *Add the following item:*

Item		**Unit**
B22.29	(a) Raising or lowering of existing manhole	No
	(b) The raising and lowering of junction boxes, valve boxes and survey markers.	No

The unit of measurement shall be the number of catchpits, manholes, junction boxes, valve boxes and survey markers raised or lowered as instructed by the Engineer.

The tendered rate shall include full compensation for raising and lowering of catchpits, manholes, junction boxes, valve boxes and survey markers as instructed by the Engineer.

SECTION 2300: CONCRETE KERBING, CONCRETE CHANNELLING, CHUTES AND DOWNPIPES, AND CONCRETE LININGS FOR OPEN DRAINS

2307 MEASUREMENT AND PAYMENT

- *Add the following items:*

Item		**Unit**
B23.16	**Demolish and remove existing kerbing, channelling and edging off site**	m
	(a) Precast kerb	
	(b) Precast channel	m
	(i) Single	m
	(ii) Double	m
	(iii) Triple	m
	(c) Precast kerb and channel	m
	(d) Precast edging	m

The unit of measurement shall be the meter of kerbing channelling and edging demolished and removed off site.

The tendered rate shall include full compensation for demolishing and removing kerbing, channelling and edging off site including a free – haul distance of 5km.

Item		**Unit**
B23.17	**Remove existing kerbing, channelling and edging and set aside for reuse**	m
	(a) Precast kerb	
	(b) Precast channel	m
	(i) Single	m
	(ii) Double	m
	(iii) Triple	m
	(c) Precast kerb and channel	m
	(d) Precast edging	m

The unit of measurement shall be the meter of kerbing channelling and edging set aside for reuse.

The tendered rate shall be deemed to cover all cost for the removal of existing kerb and channel combination units and for relaying in the new position as directed by the Engineer, including a free – haul distance of 5km.

Item		Unit
B23.18	**Concrete channelling**	**m**

(a) Precast half round channel Type W3
(b) V-Channel / Double flat channel (2 No x C1 Channels)
(c) V-Channel / Double flat channel with concrete infill up to 100mm
(d) Triple flat channel (2 No x C1 Channels plus 1 No C2 channel)
(e) Single channel Type C1
(f) Single channel Type C2

The unit of measure for items shall be the metre of concrete channelling combinations, as indicated, complete as constructed.

The tendered rate for items B23.18 and B23.19 for each meter of channelling combination shall include full compensation for the necessary excavation and preparation of bedding, backfilling, formwork, finishing, and for procuring, furnishing, installing all materials, protecting them against staining, and filling and pointing all joints - complete as specified.

Item		Unit
B23.19	**Concrete infill for V Channel**	**m**
(a) Cast in-situ 50mm width		m
(b) Cast in-situ 75mm width		m
(c) Cast in-situ 100mm width		m

The unit of measure shall be the metre of concrete infill for V channels, as indicated, complete as constructed.

The tendered rate for items B23.18 and B23.19 for each meter of channelling combination shall include full compensation for the necessary excavation and preparation of bedding, backfilling, formwork, concreting (20Mpa strength), wood float finishing, and for procuring, furnishing, installing all materials, protecting them against staining, and filling and pointing all joints - complete as specified.

Item		Unit
B23.20	**Relay existing concrete kerbing and/or channelling and edging**	**m**
(a) Precast kerb only		m
(b) Precast channel only		m
(i)	Single	m
(ii)	Double	m
(iii)	Triple	m
(c) Precast kerb and channel		m
(d) Precast edging - Type E3		m
(e) Precast edging - Type E1		m

The unit of measurement shall be the meter of kerbing, channelling edging relayed in new works.

The tendered rate shall be deemed to cover all cost for relaying in the new position as directed by the Engineer, including a free – haul distance of 5km.

Item		Unit
B23.21	**Extra over items B23.01, B23.02, B23.20 for drop kerbs at entrances and bell mouths**	**m**

The unit of measurement shall be meter of kerbs dropped at entrances and bell mouths.

The extra over rate shall include full compensation for the additional works required for the dropping and lowering of kerbs at entrances and bell mouths.

SECTION 3300: MASS EARTHWORKS

3312 MEASUREMENT AND PAYMENT

Item		**Unit**
B33.01	Cut and borrow to fill, including free-haul up to 5.0	km
B33.02	Sand fills (as obtained in clause 3302, obtained from commercial sources, unlimited free-haul):	m^3
(a)	Non-Plastic sand with up to 20% passing through the 0,075mm sieve, compacted to 100% ofmodified AASHTO density.	m^3
B33.04	Cut to spoil, including free-haul up to 5km, material obtained from	
(a) Soft excavation		m^3
(b) Intermediate excavation		m^3
(c) Hard excavation		m^3
B33.07	Removal of unsuitable material (including free-haul up to 5.0km)	m^3
(a) In layer thicknesses of 200 mm or less		
(i) Stable material		m^3
(ii) Unstable Material		m^3

- *All references to free haul distances, for the above mentioned items, is replaced is replaced with :*

A free haul distance of 5km.

SECTION 3800 BREAKING UP EXISTING PAVEMENT LAYERS

3807 MEASUREMENT AND PAYMENT

Item		**Unit**
B38.01	Excavating and removing existing bituminous material (except milled material)	m^3
(b) Material to be disposed off with the average depth of excavation		
(i) Not exceeding 30 mm		
1. Area up to and including 500m^2		m^2
2. Area exceeding 500m^2		m^2
(ii) Exceeding 30 mm but not exceeding 60 mm		
1. Area up to and including 500m^2		m^2
2. Area exceeding 500m^2		m^2
(iii) Exceeding 60 mm but not exceeding 100 mm		
1. Area up to and including 500m^2		m^2
2. Area exceeding 500m^2		m^2
(iv) Exceeding 100 mm		
1. Area up to and including 500m^2		m^2

2. Area exceeding 500m²
m²

B38.02 Milling out existing bituminous material with an average milling depth

a) Not exceeding 30mm
m²
b) Exceeding 30mm but not exceeding 60mm
m²
c) Exceeding 60mm
m²

B38.04 Excavating and spoiling material from an existing pavement and /or the underlying fill
a) Non - cemented material (granular material)
m³
b) Cemented material
m³
c) Cemented crushed stone
m³

- *All references to free haul distances, for the above mentioned items, is replaced is replaced with :*

A free haul distance of 5km.

SECTION 3900 PATCHING AND REPAIRING OF EDGE BREAKS

3907 MEASUREMENT AND PAYMENT

Item **Unit**

B39.02 Excavation in existing pavements for patching in
(a) Asphalt layers
m³
(b) Cemented layers
m³
(c) Un-stabilised granular layers
m³

- *All references to free haul distances, for the above mentioned items, is replaced is replaced with :*

A free haul distance of 5km.

Item **Unit**

B39.06 Application of waterproofing sealant to asphalt patches ('Coldseal' or similar approved)
m³

The unit of measure shall be the litre of waterproofing sealant, measured at spraying temperature and sprayed as required.

The tendered rate shall include full compensation for supplying the priming material, cleaning and watering the layer to be sealed, applying the sealant and maintaining the sealed area.

SECTION 4200 ASPHALT BASE AND SURFACING

4215 MEASUREMENT AND PAYMENT

Item **Unit**

B42.04 Tack Coat…

The unit of measure shall be the litre 30% stable grade emulsion or polymer modifies bitumen emulsion applied as specified.

The tendered rate shall include full compensation for the procuring, furnishing and application of the material as specified.

SECTION 4800: TREATMENT OF AN EXISTING SURFACE EXHIBITING CERTAIN DEFECTS

4807 MEASURMENT AND PAYMENT

Item	**Unit**
B48.14	Applying Bandage for Crack Sealing
	m^2
a) SealMac or similar approved (width of 200mm or less)	
	m^2
b) SealMac or similar approved (width more than 200mm)	
	m^2

The unit of measurement shall be the square metre of bandage supplied and laid.

The tendered rate shall include full compensation for cleaning and preparing the surface, for furnishing the material, applying the bandage and for all other incidentals necessary for completing the work according to the manufacturer's specifications.

SECTION 5700: ROAD MARKINGS

MEASURMENT AND PAYMENT

Item	**Unit**
B57.08	Removal of existing, temporary and permanent road marking by sandblasting (include via-seal application)
Clean and paint kerbs	
a)White	
	m
b) Yellow	
	m
c) Red	
	m
d) Black	
	m

The unit of measure shall be the square metre of road marking removed or obliterated and via-seal (or similar approved) applied over area where roadmarking was removed.

The tendered rate shall include full compensation for the necessary equipment, labour and materials, for any specific protection measures, accommodation of traffic, and the cleaning of the area of all dust, all as specified.

SECTION 7300: CONCRETE BLOCK PAVING FOR ROADS

7302 MATERIALS

Clay brick pavers to comply with the South African Standard Specification for burnt clay masonry units (SANS 227:2002). Tactile paving to comply to SANs 784 2008.

MEASUREMENT AND PAYMENT

Item		**Unit**
B73.04	**Clay pavers for roadways and sidewalks**	
	a) Clay brick pavers - De Hoop Red, 50mm thick	m²
	b) Clay brick paver – Autumn Paver, 50mm thick	m²
	c) Clay brick pavers - De Hoop Red, 35Mpa 73mm thick	m²
	d) Clay brick paver – Autumn Paver, Heavy Duty, 73mm thick	m²
	e) Tactile paving as per SANS 784 2008	m²

The unit of measure shall be the square metre of completed paving. The quantity shall be calculated from the dimensions shown on the drawings or as specified by the Engineer.

The tendered rate shall include full compensation for furnishing of all materials, constructing the sand bedding laying and compacting the concrete pavement blocks, filling the joints with jointing sand, and for all other work necessary to complete the brick and tactile paving as specified.

B73.05 Remove existing segmented paving units from roadways and sidewalks

(a) To spoil or stockpile on site..... Unit: m^2

The unit of measure shall be the square metre of removed to spoil or stockpile.

The tendered rate shall include full compensation for carefully removing, loading, sorting, transporting and for placing the material in stockpile or at spoil site, including a free – haul distance of 5km.

(b) Relay in new works..... Unit: m^2

The unit of measure shall be the square metre of completed paving. The quantity shall be calculated from the dimensions shown on the drawings or as specified by the Engineer.

The tendered rate shall be deemed to cover all cost for the relaying of the pavers, in the new position as directed by the Engineer, including a free – haul distance of 5km.

PART C : SECTION C1000: ENVIRONMENTAL MANAGEMENT

Contents

C1001 SCOPE

This section covers the methods by which proper environmental controls are to be implemented by the contractor. The provisions of this Environmental Management Programme (EMP) are binding on the contractor during the construction period and the defects liability period of the contract. This project specification shall be read in conjunction with all the documents that comprise the contract documents for this contract. In the event that any conflict occurs between the terms of the EMP or the environmental authorisation (if applicable), and the other project specifications, the terms herein shall prevail. The EMP covers construction activities that will impact on the environment, specifications with which the contractor shall comply in order to protect the environment from the identified impacts and actions that shall be taken in the event of non-compliance.

1002 DEFINITIONS

(a) Alien Species: (a) a species that is not an indigenous species; or (b) an indigenous species translocated or intended to be translocated to a place outside its natural distribution range in nature, but not an indigenous species that has extended its natural distribution range by natural means of migration or dispersal without human intervention as set out in the National Environmental Management: Biodiversity Act (Act No. 10 of 2004).

(b)Construction Activity: a construction activity is any action taken by the contractor, his subcontractors, suppliers or personnel during the construction process.

(c) Environment: environment means the surroundings within which humans exist and that could be made up of - (i) the land, water and atmosphere of the earth;
(ii) micro-organisms, plant and animal life;
(iii)any part or combination of (i) and (ii) and the interrelationships among and between them; and
(iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

(d) Environmental Aspect: an environmental aspect is any component of a contractor's construction activity that is likely to interact with the environment.

(e) Environmental Impact: an impact or environmental impact is the change to the environment, whether desirable or undesirable, that will result from the effect of a construction activity within the road width and limits that define the construction site. An impact may be the direct or indirect consequence of a construction activity.

(f) Environmental Authorisation (EA): an EA is a written decision from the Department of Environmental Affairs, (DEA), that records its approval or disapproval of a planned undertaking to improve, upgrade or rehabilitate a section of road and the mitigating measures required to prevent or reduce the effects of environmental impacts during the life of a contract.

(g) Road Reserve: the road reserve is a corridor of land, defined by co-ordinates and proclamation, within which the road, including access intersections or interchanges, is situated. A road reserve may, or may not, be bounded by a fence.

(h) Road Width: for the purposes of the EMP, the road width is defined as the area within the road reserve i.e. fence line to fence line, but also includes all areas beyond the road reserve that are affected by the continuous presence of the road, e.g. a reach of a water course.

C1003 IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND IMPACTS

The contractor shall identify likely aspects before commencing with any construction activity. Examples of environment aspects include waste generation, stormwater discharge, and emission of pollutants, soil erosion, deformation or destruction of environment. Thereafter the contractor shall programme his work in such a way that each cause and effect of a construction activity is also identified and the activity planned so as to prevent any impact from happening. If prevention is not practicable, or in the event of mishap or misapplication, the contractor shall provide plans and measures for the Engineer's approval, which will limit and contain the magnitude, duration and intensity of the impact. The contractor shall demonstrate that he is capable of carrying out any repair and reinstatement of the damaged environment. These requirements shall be concurrent with the time constraints to produce an approved construction programme according to clause 5.6 of the general conditions of contract and clause B1204 of the project specifications.

Construction according to best industry practice will play an important role in avoiding the occurrence of an Impact. The contractor's attention is drawn, in this regard, to C1008. Environmental Management of Construction Activities

C1004 LEGAL REQUIREMENTS

(a) General
This EMP, which forms an integral part of the contract documents, informs the contractor as to his duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. The contractor should note that obligations imposed by the EMP are legally binding in terms of environmental statutory legislation and in terms of the general conditions of contract that pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the standard or other project specifications then the latter shall prevail.

(b) Statutory and other applicable legislation
It is expected that the contractor is conversant with all legislation pertaining to the environment, including provincial and local government ordinances, which may be applicable to the contract.

C1005 ADMINISTRATION OF ENVIRONMENTAL OBLIGATIONS

(a) Appointment of a designated environmental officer (DEO)
For the purposes of implementing the conditions contained herein, the contractor shall submit to the Engineer for approval the appointment of a nominated representative of the contractor as the DEO for the contract. The request shall be given, in writing, at least fourteen days before the start of any work clearly setting out reasons for the nomination, and with sufficient detail to enable the Engineer to make a decision. The Engineer will, within seven days of receiving the request, approve, reject or call for more information on the nomination. Once a nominated representative of the contractor has been approved he/she shall be the DEO and shall be the responsible person for ensuring that the provisions of the EMP are complied with during the life of the contract. The Engineer will be responsible for issuing instructions to the contractor where environmental considerations call for action to be taken. The DEO shall submit regular written reports to the Engineer, but not less frequently than once a month.

The Engineer shall have the authority to instruct the contractor to replace the DEO if, in the Engineer's opinion, the appointed officer is not fulfilling his/her duties in terms of the requirements of the EMP or this specification. Such instruction will be in writing and shall clearly set out the reasons why a replacement is required.

(b) Administration
Before the contractor begins each construction activity the DEO shall give to the Engineer a written statement setting out the following:

(i) The type of construction activity.
(ii) Locality where the activity will take place.
(iii) Identification of the environmental aspects and impacts that might result from the activity.
(iv) Methodology for impact prevention for each activity and associated aspects.
(v) Methodology for impact containment for each activity and associated aspects.
(vi) Emergency/disaster incident and reaction procedures.

(vii) Treatment and continued maintenance of impacted environment.

The contractor may provide such information in advance of any or all construction activities provided that new submissions shall be given to the Engineer whenever there is a change or variation to the original.

The Engineer may provide comment on the methodology and procedures proposed by the DEO, but he shall not be responsible for the contractor's chosen measures of impact mitigation and emergency/disaster management systems. However, the contractor shall demonstrate at inception and/or at least once during the contract that the approved measures and procedures function properly.

The contractor shall comply with the requirements of clause 1217 of the COLTO Standard Specifications for Roads and Bridges and clauses 8.1.2 and 5.15.1 of the general conditions of contract with regard to responsibility and care for / preservation of the environment.

C1006 TRAINING

(a) Designated Environmental Officer (DEO)
The designated environmental officer (DEO) must be appropriately trained in environmental management and must possess the skills necessary to impart environmental management to all personnel involved in the contract.

(b) Employees
The contractor shall ensure that adequate environmental training takes place and all employees are given an induction presentation on environmental awareness. Where possible, the presentation needs to be conducted in the language of the employees. Environmental awareness training should, as a minimum, include the following:

(i) The importance of conformance with all environmental policies
(ii) The environmental impacts, actual or potential, of their work activities;
(iii) The environmental benefits of improved personal performance;
(iv) Their roles and responsibilities in achieving conformance with the environmental policy, procedures and management systems, including emergency preparedness and response requirements;
(v) The potential consequences of departure from specified operating procedures; and
(vi) The mitigation measures required to be implemented when carrying out their work activities.

In the case of permanent staff the contractor shall provide evidence that such induction causes have been presented. In the case of new staff (including contract labour) the contractor shall inform the Engineer when and how he intends concluding its environmental training obligations.

C1007 ACTIVITIES/ASPECTS CAUSING IMPACTS

A list of possible causes of environmental impacts that occur during construction activities is given in table 7/1: Activities and associated aspects that cause environmental impacts during construction activities, which is to be found at the end of this section. This list is not exhaustive, and shall be used for guideline purposes only.

C1008 ENVIRONMENTAL MANAGEMENT OF CONSTRUCTION ACTIVITIES

(a) Site establishment

(i) Site plan
In accordance with subclause 1302(a) of the COLTO Standard Specifications the contractor shall establish his construction camps, offices, workshops and testing facilities on the site in a manner that does not adversely affect the environment. However, before construction can begin, the contractor shall submit to the Engineer for his approval, plans of the exact location, extent and construction details of these facilities and the impact mitigation measures the contractor proposes to put in place.

The camp site shall be selected with due regard to the environment and sensitive areas. The site offices should not be sited in steep areas, as this will increase soil erosion. Preferred locations would be on flat areas. The plans shall detail the locality as well as the layout of the waste treatment facilities for litter, refuse, sewage and workshop-derived effluents. It is also recommended that the ablution facilities, aggregate stockpiles, spoil areas and hazardous material stockpiles are located as far away as possible from any water course, stream or river as possible. Regardless of the chosen site, the contractor's intended mitigation measures shall be indicated on the plan. The site plan shall be submitted prior to the start of construction. Detailed, electronic colour photographs shall be taken of the proposed site before any clearing may commence. These records are to be kept by the Engineer for consultation during rehabilitation of the site.

(ii)Vegetation
The contractor has a responsibility to inform his staff of the need to be vigilant against any practice that will have a harmful effect on vegetation.

The natural vegetation encountered on the site is to be conserved and left as intact as possible. Vegetation planted at the site shall be indigenous and in accordance with instructions issued by the Engineer. Only trees and shrubs directly affected by the works, and such others as may be indicated by the Engineer in writing, may be felled or cleared. In wooded areas where natural vegetation has been cleared out of necessity, same specie indigenous trees as previously existing in the area shall be re- established.
Section 5800 of the COLTO Standard Specification for landscaping, planting and the rehabilitation of the grass cover shall be strictly adhered to. Any proclaimed weed or alien species that propagates during the contract period shall be cleared by hand before seeding.

(iii) Restoration
The area where the site offices were erected will require rehabilitation at the end of the contract. All construction material, including concrete slabs and braai areas shall be removed from the site on completion of the contract.

(iv) Water
Safe drinking water for human consumption shall be available at the site offices and at other convenient locations on site. All water used on the site must be taken from a legal source and comply with recognized standards for potable and other uses. The contractor shall comply with the provisions of the National Water Act and its Regulations for taking water from rivers or streams and the use thereof. If water is stored on site distinction shall be made between drinking water and multi-purpose water storage facilities.

All effluent water from the camp / office sites shall be disposed of in a properly designed and constructed system, situated so as not to adversely affect water sources (streams, rivers, dams etc). Washing of clothes and bathing in rivers or streams is strictly forbidden. Wastewater which is contaminated with soaps, detergents, grease, oils and other undesirable materials shall be collected in conservancy tanks and disposed of safely into a wastewater treatment facility.

(v) Fires and cooking facilities
The contractor shall provide adequate facilities for his staff so that they are not encouraged to supplement their comforts on site by accessing what can be taken from the natural surroundings. Fires shall only be allowed in facilities or equipment specially constructed for this purpose. Where instructed by the Engineer, a firebreak shall be cleared and maintained around the perimeter of the camp and office sites. Firefighting equipment shall be supplied by the contractor at suitable locations.

The contractor shall ensure that energy sources are available at all times for construction and supervision personnel for heating and cooking purposes.

(b) Sewage treatment
Particular reference in the site establishment plan shall be given to the treatment of sewage generated at the site offices, site laboratory and staff accommodation and at all localities on the site where there will be a concentration of labour. Sanitary arrangements should be to the satisfaction of the Engineer, the local authorities and comply with legal requirements.

Safe and effective sewage treatment will require one of the following sewage handling methods: septic tanks and soak-aways, dry-composting toilets such as “enviro loos”, or the use of chemical toilets whichare supplied and maintained by a subcontractor. The type of sewage treatment will depend on the geology of the area selected, the duration of the contract and proximity (availability) of providers of chemical toilets. Should a soak-away system be used, it shall not be closer than 800 metres from any natural water course or water retention system. The waste material generated from these facilities shall be serviced on a regular basis. The positioning of the chemical toilets shall be located in consultation with theEngineer.

Toilets and latrines shall be easily accessible and shall be positioned within walking distance fromwherever employees are employed on the works. Use of the veld for this purpose shall not, under any circumstances, be allowed.

Outside toilets shall be provided with locks and doors and shall be secured to prevent them from blowing over. The toilets shall also be placed outside areas susceptible to flooding. The contractor shall arrange for regular emptying of toilets and shall be entirely responsible for enforcing their use and for maintaining such latrines in a clean, orderly and sanitary condition to the satisfaction of the Engineer.

(c) Waste management

The contractor’s intended methods for waste management and waste minimisation shall be implemented at the start of the contract. All personnel shall be instructed to dispose of all waste in the proper manner.

(i) Solid waste

Solid waste shall be stored in an appointed area in covered, tip proof metal drums for collection and disposal. A refuse control system shall be established for the collection and removal of refuse to the satisfaction of the Engineer. Disposal of solid waste shall be at a licensed landfill site or at a site approved by the DEA in the event that an existing operating landfill site is not within reasonable distance from thesite offices and staff accommodation. No waste shall be burned or buried at or near neither the site offices, nor anywhere else on the site or at the approved solid waste disposal site.

(ii) Litter

No littering by construction workers shall be allowed. During the construction period, the facilities shall be maintained in a neat and tidy condition and the site shall be kept free of litter. Measures shall be taken to reduce the potential for litter and negligent behaviour with regard to the disposal of all refuse. At all places of work the contractor shall provide litter bins, containers and refuse collection facilities for later safe disposal to approved sites. A concerted effort shall be made to collect and dispose of materials suitable for recycling separately from other solid waste.

(iii) Hazardous waste

Hazardous waste such as bitumen, tar, oils etc. shall be disposed of in an approved landfill site. Special care shall be taken to avoid spillage of tar or bitumen products such as binders or pre-coating fluid to avoidwater-soluble phenols from entering the ground or contaminating water.

Under no circumstances shall the spoiling of tar or bituminous products on the site, over embankments, in borrow pits or any burying, be allowed. Unused or rejected tar or bituminous products shall be returned to the supplier’s production plant. No spillage of tar or bituminous products shall be allowed on site. Affected areas shall be promptly reinstated to the satisfaction of the Engineer.

(iv) Plant and equipment

The contractor’s management and maintenance of his plant and machinery will be strictly monitored according to the criteria given below, regardless whether it is serviced on the site (i.e. at the place of construction activity or at a formalised workshop).

(v) Safety

All the necessary handling and safety equipment required for the safe use of petrochemicals and oils shall be provided by the contractor to, and used or worn by, the staff whose duty it is to manage and maintain the contractor’s and his subcontractor’s and supplier’s plant, machinery and equipment.

(vi) Hazardous material storage

Petrochemicals, oils and identified hazardous substances shall only be stored under controlled conditions. All hazardous materials e.g. tar or bitumen binders shall be stored in a secured, appointed area that is fenced and has restricted entry. Storage of tar or bituminous products shall only take place using suitable containers to the approval of the Engineer.

The contractor shall provide proof to the Engineer that relevant authorisation to store such substances has been obtained from the relevant authority. In addition, hazard signs indicating the nature of the stored materials shall be displayed on the storage facility or containment structure. Before containment or storage facilities can be erected the contractor shall furnish the Engineer with details of the preventative measures he proposes to install in order to mitigate against pollution of the surrounding environment from leaks or spillage. The preferred method shall be a concrete floor that is bonded. Any deviation from the method will require proof from the relevant authority that the alternative method proposed is acceptable to that authority. The proposals shall also indicate the emergency procedures in the event of misuse or spillage that will negatively affect an individual or the environment.

(vii) Fuel and gas storage
Fuel should be stored in a secure area in a steel tank supplied and maintained by the fuel suppliers. Leakage of fuel shall be avoided. An adequate bund wall, 110% of volume, shall be provided for fuel and diesel areas to accommodate any spillage or overflow from these substances. The area inside the bund wall shall be lined with an impervious lining to prevent infiltration of the fuel into the soil.

Gas welding cylinders and LPG cylinders shall be stored in a secure, well-ventilated area.

(viii) Oil and lubricant waste
Fuel tanks, pumps and all equipment using oil, diesel, etc. must have drip trays. Used oil, lubricants and cleaning materials from the maintenance of vehicles and machinery shall be collected in a holding tank and sent back to the supplier. Water and oil should be separated in an oil trap. Oils collected in this manner, shall be retained in a safe holding tank and removed from site by a specialist oil recycling company for disposal at approved waste disposal sites for toxic/hazardous materials. Oil collected by a mobile servicing unit shall be stored in the service unit's sludge tank and discharged into the safe holding tank for collection by the specialist oil recycling company.

All used filter materials shall be stored in a secure bin for disposal off site. Any contaminated soil shall be removed and replaced. Soils contaminated by oils and lubricants shall be collected and disposed of at a facility designated by the local authority to accept contaminated materials.

(c) Clearing the site
In all areas where the contractor intends to, or is required to clear the natural vegetation and soil, either within the road reserve, or at designated or instructed areas outside the road reserve, a plan of action shall first be submitted to the Engineer for his approval.

The plan shall contain a photographic record and chainage/land reference of the areas to be disturbed. This shall be submitted to the Engineer for his records before any disturbance/stockpiling may occur. The record shall be comprehensive and clear, allowing for easy identification during subsequent inspections.

The contractor shall be held responsible for re-establishment of grass within the road reserve boundaries for all areas disturbed during road construction. This includes, for example, service roads, stockpile areas, stop/go facilities, windrows and wherever material generated for, or from, road construction has to be stored temporarily or otherwise within the road reserve, or at designated or instructed areas outside the road reserve. This responsibility shall extend until expiry of the defects liability period.

(d) Soil management

(i) Topsoil
Topsoil shall be removed from all areas where physical disturbance of the surface will occur and shall be stored and adequately protected. The contract will provide for the stripping and stockpiling of topsoil from the site for later re-use. Topsoil is considered to be the natural soil covering, including all the vegetation and organic matter. Depth may vary at each site. The areas to be cleared of topsoil shall include the storage areas. All topsoil stockpiles and windrows shall be maintained throughout the contract period in a weed-free condition. Weeds appearing on the stockpiled or windrowed topsoil shall be removed by hand. Soils contaminated by hazardous substances shall be disposed of at an approved Department of Water Affairs and Forestry waste disposal site. The topsoil stockpiles shall be stored, shaped and sited in such away that they do not interfere with the flow of water to cause damming or erosion, or itself be eroded by the action of water. Stockpiles of topsoil shall not exceed a height of 2 m, and if they are to be left for longer than 6 months, shall be analysed, and if necessary, upgraded before replacement. Stockpiles shall be protected against infestation by weeds.

The contractor shall ensure that no topsoil is lost due to erosion – either by wind or water. Areas to be top soiled and grassed shall be done so systematically to allow for quick cover and reduction in the chance of heavy topsoil losses due to unusual weather patterns. The contractor's programme shall clearly show the proposed rate of progress of the application of topsoil and grassing. The contractor shall be held responsible for the replacement, at his own cost, for any unnecessary loss of topsoil due to his failure to work according to the progress plan approved by the Engineer. The contractor's responsibility shall also extend to the clearing of drainage or water systems within and beyond the boundaries of the road reserve that may have been affected by such negligence.

(ii) Subsoil

The subsoil is the layer of soil immediately beneath the topsoil. It shall be removed, to a depth instructed by the Engineer, and stored separately from the topsoil if not used for road building. This soil shall be replaced in the excavation in the original order it was removed for rehabilitation purposes.

(e) Drainage

The quality, quantity and flow direction of any surface water runoff shall be established prior to disturbing any area for construction purposes. Cognisance shall be taken of these aspects and incorporated into the planning of all construction activities. Before a site is developed or expanded, it shall be established how this development or expansion will affect the drainage pattern. Recognised water users / receivers shall not be adversely affected by the expansion or re-development. Surface water runoff must be managed to minimise erosion. No water source shall be polluted in any way due to proposed changes.

Streams, rivers, pans, wetlands, dams, and their catchments shall be protected from erosion, direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, tailings, wash water, organic materials and bituminous or tar products.

The contractor shall submit to the Engineer his proposals for prevention, containment and rehabilitation measures against environmental damage of the identified water and drainage systems that occur on the site. Consideration shall be given to the placement of sedimentation ponds or barriers where the soils are of a dispersive nature or where toxic fluids are used in the construction process. The sedimentation pondsmust be large enough to contain runoff so that they function properly under heavy rain conditions.

(f) Earthworks and layerworks

This includes all construction activities that involve the mining of all materials, and their subsequent placement, stockpile, spoil, treatment or batching, for use in the permanent works, or temporary works in the case of deviations. Before any stripping prior to the commencement of construction, the contractor shall comply with the requirements of subclauses C1008 (e) and C1008 (g) and shall take cognisance of the requirements set out below.

(i) Quarries and borrow pits:

The contractor's attention is drawn to the requirement of the Department of Minerals and Resources that before entry into any quarry or borrow pit, an EMP for the establishment, operation and closure of the quarry or borrow pit shall have been approved by the Department. It is the responsibility of the contractor to ensure that he obtains from the Engineer, a copy of the approved EMP prior to entry into the quarry or borrow pit. The conditions imposed by the relevant EMP are legally binding on the contractor and may be more extensive and explicit than the requirements of this specification. In the event of any conflict occurring between the requirements of the specific EMP and this specification the former shall apply. The cost of complying with the requirements shall be deemed to be included in existing rates in the bill of quantities.

(ii) Excavation, hauling and placement:

The contractor shall provide the Engineer with detailed method statement of his intended construction processes prior to starting any cut or fill or layer. The method statement shall detail the number of personnel and plant to be used and the measures by which the impacts of pollution (noise, dust, litter, fuel, oil, and sewage), erosion, vegetation destruction and deformation of landscape will be prevented, contained and rehabilitated. Particular attention shall also be given to the impact that such activities will have on the adjacent built environment. The contractor shall ensure that at work closure at the end of every day the site is left in a safe condition from rainfall overnight or over periods when there is no construction activity.

(iii) Spoil sites:

The contractor shall be responsible for the safe siting, operation, maintenance and closure of any spoil site he uses during the contract period, including the defects liability period. This shall include existing spoil sites that are being re-entered. Before spoil sites may be used proposals for their locality, intended method of operation, maintenance and rehabilitation shall be given to the Engineer for his approval. The location of

these spoil sites shall have signed approval from the affected landowner before submission to the Engineer. No spoil site shall be located within 500m of any watercourse. A photographic record shall be kept of all spoil sites for monitoring purposes. This includes before the site is used and after re- vegetation.

The use of approved spoil sites for the disposal of hazardous or toxic wastes shall be prohibited unless special measures are taken to prevent leaching of the toxins into the surrounding environment. Such special measures shall require the approval of the relevant provincial or national authority. The same shall apply for the disposal of solid waste generated from the various camp establishments. The Engineer will assist the contractor in obtaining the necessary approval if requested by the contractor.

Spoil sites will be shaped to fit the natural topography. These sites shall receive a minimum of 75 mm topsoil and be grassed with the recommended seed mixture. Slopes shall not exceed a vertical: horizontalratio of 1:3. Only under exceptional circumstances will approval be given to exceed this ratio. Appropriate grassing measures to minimise soil erosion shall be undertaken by the contractor. This will include both strip and full sodding. The contractor may motivate to the Engineer for other acceptable stabilising methods. The Engineer may only approve a completed spoil site at the end of the defects liability period upon receipt from the contractor of a landowner's clearance notice and an Engineer's certificate certifying slope stability. The contractor's costs incurred in obtaining the necessary certification for opening and closing of spoil sites shall be deemed to be included in the tendered rates for spoiling.

(iv) Stockpiles:

The contractor shall plan his activities so that materials excavated from borrow pits and cuttings, in so far as possible, can be transported direct to and placed at the point where it is to be used. However, should temporary stockpiling become necessary, the areas for the stockpiling of excavated and imported material shall be indicated and demarcated on the site plan submitted in writing to the Engineer for his approval, together with the contractor's proposed measures for prevention, containment and rehabilitation against environmental damage.

The areas chosen shall have no naturally occurring indigenous trees and shrubs present that may be damaged during operations. Care shall be taken to preserve all vegetation in the immediate area of these temporary stockpiles. During the life of the stockpiles the contractor shall at all times ensure that they are:

(1) Positioned and sloped to create the least visual impact;
(2) Constructed and maintained so as to avoid erosion of the material and contamination of surrounding environment; and
(3) Kept free from all alien/undesirable vegetation.

After the stockpiled material has been removed, the site shall be re-instated to its original condition. No foreign material generated / deposited during construction shall remain on site. Areas affected by stockpiling shall be landscaped, topsoiled, grassed and maintained at the contractor's cost until clearance from the Engineer is received.

Material milled from the existing road surface that is temporarily stockpiled in areas approved by the Engineer within the road reserve, shall be subject to the same condition as other stockpiled materials. Excess materials from windrows, in situ milling or any detritus of material from road construction activities may not be swept off the road and left unless specifically instructed to do so by the Engineer

In all cases, the Engineer shall approve the areas for stockpiling and disposal of construction rubble before any operation commences and shall approve their closure only when they have been satisfactorily rehabilitated.

(v) Blasting activities:

Wherever blasting activity is required on the site (including quarries and/or borrow pits) the contractor shall rigorously adhere to the relevant statutes and regulations that control the use of explosives. In addition, the contractor shall, prior to any drilling of holes in preparation for blasting, supply the Engineer with a locality plan of the blast site on which shall be shown the zones of influence of the ground and air shock- waves and expected limits of fly-rock. The plan shall show each dwelling, structure and service within the zones of influence and record all details of the dwellings/structures/services including existing positions, lengths and widths of cracks, as well as the condition of doors, windows, roofing, wells, boreholes etc. The contractor, alone, shall be responsible for any costs that can be attributed to blasting activities, including the collection of fly-rock from adjacent lands and fields. The submission of such a plan shall not in any way absolve the contractor from his responsibilities in this regard. The contractor shall also indicate to the Engineer the manner in which he intends to advertise to the adjacent communities and/or road usersthe time and delays to be expected for each individual blast.

(g) Batching sites

Asphalt plants are considered scheduled processes listed in Category 1 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004). Should the use of an asphalt plant beconsidered on site, the contractor shall be responsible to obtain the necessary permit from the Department of Environmental Affairs, regardless of where they are sited.

Crushing plants and concrete batching plants, whether sited inside or outside of defined quarry or borrow pit areas, shall be subject to the requirements of the Department of Minerals and Resources legislation as well as the applicable industrial legislation that governs gas and dust emissions into the atmosphere. Such sites will be subject to regular inspections by the relative authorities during the life of the project. In addition, the selection, entry onto, operation, maintenance, closure and rehabilitation of such sites shall be the same as for those under subclause C1008(h)(iii), with the exception that the contractor shall provide additional measures to prevent, contain and rehabilitate against environmental damage from toxic/hazardous substances. In this regard the contractor shall provide plans that take into account such additional measures as concrete floors, bunded storage facilities, linings to drainage channels and settlement dams. Ultimate approval of these measures shall be from the relevant national authority, as shall approval of closure. The Engineer will assist the contractor in his submissions to the relevant authority.

Effluent from concrete batch plants and crusher plants shall be treated in a suitable designated sedimentation dam to the legally required standards to prevent surface and groundwater pollution. The designs of such a facility should be submitted to the Engineer for approval.

The contractor shall invite the relevant department to inspect the site within 2 months after any plant is commissioned and at regular intervals thereafter, not exceeding 12 months apart.

(h) Spillages:

Streams, rivers and dams shall be protected from direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, tailings, wash water, organic materials and tar or bituminous products. In the event of a spillage, the contractor shall be liable to arrange for professional service providers to clear the affected area.

Responsibility for spill treatment lies with the contractor. The individual responsible for, or who discovers,a hazardous waste spill must report the incident to Designated Environmental Officer (DEO) or to the Engineer. The DEO will assess the situation in consultation with the Engineer and act as required. In all cases, the immediate response shall be to contain the spill. The exact treatment of polluted soil / water shall be determined by the contractor in consultation with the DEO and the Engineer. Areas cleared of hazardous waste shall be re-vegetated according to the Engineer's instructions

Should water downstream of the spill be polluted, and fauna and flora show signs of deterioration or death, specialist hydrological or ecological advice will be sought for appropriate treatment and remedial procedures to be followed. The requirement for such input shall be agreed with the Engineer. The costs of containment and rehabilitation shall be for the contractor's account, including the costs of specialist input.

(i) Areas of specific importance:

Any area, as determined and identified as sensitive or of special interest within the site shall be treated according to the express instructions contained in these specifications or the approved EMP. The contractor may offer alternative solutions to the Engineer in writing should he consider that construction will be affected in any way by the hindrance of the designated sensitive area or feature. However, the overriding principle is that such defined areas requiring protection shall not be changed. Every effort to identify such areas within the site will have been made prior to the project going out to tender. The discovery of other sites with archaeological or historical interest that have not been identified shall require ad hoc treatment

(i) Archaeological sites:

If an artefact on site is uncovered, work in the immediate vicinity shall be stopped immediately. The contractor shall take reasonable precautions to prevent any person from removing or damaging any such article and shall immediately upon discovery thereof inform the Engineer of such discovery. The South African Heritage Resources Agency (SAHRA) is to be contacted who will appoint an archaeological consultant. Work may only resume once clearance is given in writing by the archaeologist.

(ii) Graves and middens:

If a grave or midden is uncovered on site, or discovered before the commencement of work, then all work in the immediate vicinity of the graves/middens shall be stopped and the Engineer informed of the discovery. The SAHRA should be contacted and in the case of graves, arrangements made for an undertaker to carry out exhumation and reburial. The undertaker will, together with the SAHRA, be responsible for attempts to contact family of the deceased and for the site where the exhumed remainscan be re-interred.

(j) Noise control:

The contractor shall endeavour to keep noise generating activities to a minimum. Noises that could cause a major disturbance, for instance blasting and crushing activities, should only be carried out during daylight hours. Compliance with the appropriate legislation with respect to noise shall be mandatory.

Should noise generating activities such as drilling have to occur at night the people in the vicinity of the drilling shall be warned about the noise well in advance and the activities kept to a minimum.

(k) Dust control:

Dust suppression measures shall be implemented if and when required. Dust caused by strong winds shall be controlled by means of water spray vehicles. Dust emission from batching plants shall be subject to the relevant legislation and shall be the subject of inspection by the relevant Department of Minerals and Resources.

(l) Alien vegetation:

The contractor shall be held responsible for the removal of alien vegetation within the road reserve disturbed during road construction. This includes, for example, service roads, stockpile areas, stop/go facilities, windrows and wherever material generated for or from road construction has been stored temporarily or otherwise within the road reserve. This responsibility shall extend for the duration of the defects liability period.

C1009 RECORD KEEPING

The Engineer and the designated environmental officer (DEO) will continuously monitor the contractor's adherence to the approved impact prevention procedures and shall issue to the contractor a notice of non-compliance whenever transgressions are observed. The DEO shall document the nature and magnitude of the non-conformance in a designated register, the action taken to discontinue the non-conformance, the action taken to mitigate its effects and the results of the actions. The non-conformance shall be documented and reported to the Engineer in a monthly report.

Copies of any Environmental Authorisation or EMP's for specific borrow pits or quarries used on the project shall be kept on site and made available for inspection by visiting officials from the employer or relevant environmental departments.

C1010 COMPLIANCE AND PENALTIES

The contractor shall act immediately when such notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the construction site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. This record shall be submitted with the monthly reports and a verbal report given atthe monthly site meetings.

Any avoidable non-compliance with the above-mentioned measures shall be considered sufficient ground for the imposition of a penalty. The value of the penalty shall not be less than the payment that would have been due to the contractor for the day's production of the relevant item of work that gave cause forthe infringement. The calculation shall include allied construction activities in the same way as the calculation of reduced payments under section 8200. The imposition of such a penalty shall not preclude the relevant provincial or national authority from applying an additional penalty in accordance with its statutory powers. Any non-compliance with the agreed procedures of the EMP is a transgression of the various statutes and laws that define the manner by which the environment is managed.

Failure to redress the cause shall be reported to the relevant authority for them to deal with the transgression, as it deems fit.

C1011 MEASUREMENT AND PAYMENT

Item	**Unit**
C10.01 The contractor's obligations in respect of environmental management:	
(a) Designated environmental officer (DEO)	
1. Minor Works with value <R200 000	day
2. Works with value R200 000 – R600 000	day
3. Works with value >R600 000	day
(b) Environmental aspects and impacts	
1. Minor Works with value <R200 000	day
2. Works with value R200 000 – R600 000	day
3. Works with value >R600 000	day

Payment of the daily rate tendered in sub-item (a) shall include full compensation for all costs resulting from the recruitment and employment of a designated environmental officer, the control and management, the onsite hands-on and in-house training, and the assistance rendered to personnel, staff and equipment engaged in construction and other tasks on the site of works. The cost of the on-site training facility if specified is measured and paid for under item D10.03 of the bill of quantities.

The tendered daily rate for sub-item (b) shall include full compensation for complying with the requirements in respect of the EMP as specified.

Table 7/1

MECHANISMS THAT CAUSE ENVIRONMENTAL IMPACTS DURING CONSTRUCTION ACTIVITIES						
Section	**Contents**	**Environmental Impacts**				
		Pollution Type	**Deformation of Landscape**	**Soil erosion**	**Alien Vegetation**	**Sensitive Areas (to be completed by compiler)**
1300	Camp Establishment	Waste treatment Hazardouswaste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
1400	Housing, Offices andlaboratories	Waste treatment Hazardouswaste Water supply Spillage Storage Noise/lights	Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
1500	Accommo-dation of Traffic	Waste treatment Hazardouswaste Water supply Spillage Storage Noise/lights Dust control	Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas Maintenanceof windrows	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
1600	Overhaul	Spillage Storage Noise/lights Dust control Exhaust fumesWashing waste	Turning circles Parking areas	Restrict access to sensitive areas	Protection of indigenous vegetation Preserve topsoil	
1700	Clearingand grubbing	Waste treatment Hazardouswaste Water supply Noise /lights Dust control	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Protection of indigenous vegetation Preserve topsoil	
2100 to 2400	Drainage	Waste treatment Hazardouswaste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
3100	Borrow pits	Waste treatment Hazardouswaste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	

MECHANISMS THAT CAUSE ENVIRONMENTAL IMPACTS DURING CONSTRUCTION ACTIVITIES						
Section	**Contents**	**Environnemental Impacts**				
		Pollution Type	**Deformation of Landscape**	**Soil erosion**	**Alien Vegetation**	**Sensitive Areas (to be completed by compiler)**
3200	Stockpiling	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
3300	Mass Earthworks	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
3400 to 3900	Pavement layers	Waste treatment Hazardous waste Water supply Spillage Storage Noise / lights Dust control	Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas Maintenance of windrows	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
4100	Asphalt works / sealing operations	Waste treatment Hazardous waste Water supply Spillage Storage Noise / lights Dust control Smoke control Storage of materials	Selection of site Preserve indigenous vegetation Preserve topsoil Turning circles Parking areas	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil	
5000	Ancilliary roadworks	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	
6000	Structures	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	

MECHANISMS THAT CAUSE ENVIRONMENTAL IMPACTS DURING CONSTRUCTION ACTIVITIES						
Section	**Contents**	**Environmental Impacts**				
		Pollution Type	**Deformation of Landscape**	**Soil erosion**	**Alien Vegetation**	**Sensitive Areas (to be completed by compiler)**
7000	Concrete pavements etc	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	

PROJECT SPECIFICATIONS

PART C SECTION C1100: COLD IN-SITU STABILISATION WITH A NANO-MODIFIED EMULSION (NME) STABILISING AGENT

CONTENTS

C1101 SCOPE

This section covers work required for construction of new roads or for the rehabilitation of the upper pavement layers (base and sub-base) using the cold in-situ recycling process with (a) conventional equipment, (b) recycler and (c) central mixing plant. The construction of new pavement layers using an appropriated NME stabilising agent is aimed at the use of naturally available materials from the area of the road that can cost-effectively be utilised in the upper pavement layers.
The rehabilitation of existing roads are aimed at the optimum use of damaged or weathered in-situ materials in a cold in-situ recycling process which may include a pre-stabilisation process of the breaking up of existing pavement layers and mixing of the materials, with or without the addition of new material to achieve a uniformly mixed material with no materials exceeding the least maximum size of 63 mm or a third the total thickness of the layer that are being recycled. After a homogeneous mix has been achieved, the material is in-situ stabilised with the applicable NME stabilising agent to produce a homogenous mixture, which is spread, cut to level and compacted to the required specification.
This section further covers the use of Nano-prime, as a temporary surface for early trafficking.

C1102 MATERIALS

The use of NME stabilising agents are specifically developed for the optimal use of naturally available material (new or in-situ) in the upper pavement layers as specified in Table C1102/1. The aim is to cost-effectively utilise naturally available materials as an alternative to newly crushed stone materials in both the design and construction of new roads as well as the rehabilitation of existing pavements through the improvement of existing damaged or weathered materials in the various pavement layers.
Materials from existing pavement layers shall be classified as follows for excavation and processing purposes:

(i) Existing bituminous material:

Bituminous surfacing shall be asphalt surfacing and bituminous seal from the existing layers. Where the asphalt surfacing and bituminous seal are recycled together with the underlying layers, the mixture will not be classified as bituminous material.

(ii) Granular material:

The base and sub-base pavement layers in the existing pavement shall be classified as granular materials.
Granular material shall include crushed stone gravel soil and natural gravel and can consist of cemented or non-cemented material. Crushed stone obtained from existing pavements and processed as gravel material will be paid for as gravel material and not as crushed stone.
The mixture of bituminous material (RA) and base and sub-base material shall be classified as granular material.

(iii) Extra material:

Extra material as specified consists of:

(a) Naturally available materials (and (if cost-effective) crushed stone materials)
The pavement layers will be designed based on the requirements of the design traffic loadings and the material specifications required for the various pavement layers as designed, complying with Table C1102/1.
(b) Crusher dust.
No crusher dust is to be used with NME stabilising agents.
(c) Gravel.

The gravel material shall be of G5 to G8 type as per table C1102/1.
Payment for the addition of extra material shall be made under Pay Item C11.10.

(iv) Bituminous stabilization:

(a) Stabilising Agent: Nano-Modified (bitumen) Emulsion (NME).

An applicable cold Nano-Modified Emulsion consisting of a SS60 anionic Emulsion with a Sodium Hydroxideemulsifier (Vinsol resin) modified with a compatible (with the tested mineralogy of the materials) Alkyalkoxy/organo- silane or similar with or without a Nano-polymer resulting in a stabilised mix meeting the requirements as per Table C1102/1 for the pavement layer specified using the prescribed test procedures. The modification must have a proven track record with the Gauteng Province Department of Roads and Transport.

(b) Additive for granular material treatment.

No cement or lime will be added.

(c) Water.

Water used for diluting the NME shall be clean and free from any salts that will cause the emulsion to break during dilution, and shall be tested for compatibility with the prescribed stabilising additive.
Water must be preferably potable and the pH shall not exceed 7. Should local sources be considered, prior laboratory testing to ensure acceptability will be required.

(v) Chemical modification of material:

No additional chemical modification of the NME stabilised material will be allowed if not contained in the original specification. In all cases the requirements given in Table C1102/1 will be met.

TABLE C1102/1: STANDARD SPECIFICATIONS FOR NANO-MODIFIED EMULSION (NME)STABILISING MATERIALS

Test or Indicator	Material[1]	Material classification			
		NME1	NME2	NME3	NME4
Minimum material requirements before stabilisation and/or treatment (Natural materials)					
Material spec.(minimum) Unstabilised material: Soaked CBR (%) (Mod. AASHTO)	NG /(CS)	> 45 or > 25 (95%) and ACV < 30% or10% FACT >110 kN	> 45 or > 25 (95%) and ACV < 30% or10% FACT >110 kN	> 25 (95%)	> 10 (93%)
Plasticity Index (PI)	CS	< 10	< 10	-	-
	NG	< 12	< 12	< 16	< 16
	GS	-	< 12	< 16	< 16
	SSSC	-	-	-	< 16
PI - 0.075 fraction (test when OMC >8% and/or % passing 0.075 mm sieve >10%)	CS	< 15	< 15	-	-
	NG	< 20	< 20	< 25	< 40
	GS	-	< 20	< 25	< 30
	SSSC	-	-	-	< 30
Grading modulus	NG	> 1.8	> 1.5	> 1.2	> 0.45
	GS	-	>1.5	> 1.2	> 0.75
DCP DN (mm/blow) (Material compacted to spec.before stabilisation)		< 3.0	< 3.6	< 9.0	< 13.5
Material specifications after stabilisation and/or treatment					
MOD AASHTO density		> 100%	> 98%	> 97%	> 95 %
DCP DN (mm/blow) Material compacted to spec. (after stabilisation)		< 1.5	< 1.8	< 3.7	< 5.5
UCS (wet) (rapid curing method: 24h at ambient temp (30°C) + 48h at 4[illegible]°C -45°C + 24h cooling + 4h water soaking) (kPa)	150mm Φ Sample	> 2 500	1 500 to 6 000	750 to 4 000	450 To 3000
Friction Angle (°)		> 40	> 40	> 30	> 30
ITS* (dry) (kPa) (rapid curing as per UCS)(no soaking in water)	150mm Φ Sample	> 175	> 140	> 100	> 80
ITS* (wet) (kPa) (rapid curing as per UCS method)	150mm Φ Sample	> 140	> 100	> 80	> 60
Retained Cohesion: ITS: Wet/Dry (%)	All	> 80	> 70	> 65	> 60
Typical Effective Elastic Moduli for pavement design (MPa)**		600 - 300	400 - 250	300 - 200	220 - 180

[1]CS – crushed stone; NG – natural gravel; GS – gravel soil, and SSSC – sand, silty sand, silt, clay.
*ITS repeatability is questionable (TG2, 2009) and may be replaced in future by more reliable tests asan indication of the tensile properties of materials (e.g. Mbaraga, Jenkins and Van der Ven, 2014).
** These recommended values could vary considerably and are dependent of various influencesincluding, appropriate mix design, **pavement balance**, quality control during construction, etc.

(VI) Stabilisation of sub-base:

In the case of the rehabilitation of an existing road or the construction of a new road, the sub-base shall conform to requirements of the layer as per design. In all cases the possible consequences and compatibility of the layer characteristics in terms of the expected behaviour of the pavement structure as a whole needs to be assessed by the Engineer.

C1103 COMPOSITION OF RECYCLED MIXES

During rehabilitation of existing pavement layers, the recycled material shall consist of the existing surfacing, granular material from existing pavement layers, additional material where required and an applicable Nano-Modified (bituminous) emulsion (NME) stabilising agent.
The actual composition of the mix shall be determined by the Engineer in order to comply with the testing requirements as specified in Table C2001/1.
Adjustments to the actual mix constituents may be required during construction (taking into account the effect of construction procedure (e.g. conventional equipment vs recycler vs central mixing plant) and climatic conditions and shall be authorised by the Engineer. The Engineer reserves the right to adjust the composition of the mix at any time should he deem it necessary. The Contractor shall obtain the final mix proportions from the Engineer before any materials are ordered.
The average values for maximum dry density shall be confirmed by the Engineer prior to any work commencing.

C1104 PLANT AND EQUIPMENT

(a) Conventional Plant:

A heavy duty motor grader is an essential item of plant for NME, irrespective of the combination of any of the other plant items used. This grader is required to pre-shape the material prior to being treated, for processing the material and, thereafter, to cut the layer to final levels. Processing by grader includes mixing the material prior to treatment and mixing in the additive and the diluted NME.
A milling machine will be required to break up a thick asphalt layer and/or high strength cemented material to produce a material suitable for the NME. When in-situ material is to be augmented with imported material, a milling machine can also be effectively used to blend the two materials after the additional material has been levelled out on top of the in-situ material and pre-shaped with a grader.
Alternatively, layers that have developed high in-situ strength can be broken down using a “woodpecker-type” fitted to an excavator. The resulting chunks of pavement material can then be transported to a single-stage crusher to be crushed and transported back to the road for further processing.

(b) Recycling Equipment:

The plant shall be so equipped that it will be able to recycle pavement layers to depths up to at least 250 mm in one operation. The plant shall be equipped so that the NME stabilising agent and required water can be added uniformly in a calibrated and controlled manner directly to the material being recycled. Width reduction must be possible on the application nozzles when overlap recycling is done. The recycling depth shall be controlled electronically.
The direction and speed of the recycling machine and the speed of rotation of the scarifying drum shall be adjusted so as to obtain the required grading and sufficient mixing of all the components of the recycled material. The machine shall be capable of making a neat vertical cut at the outer edges when recycling the layer.

(c) Water Tanker:

Self-propelled water tankers, with a 15 000 litre capacity, are essential plant items for the successful construction of a NME stabilised layer. In addition to supplying the NME for mixing, water tankers are required to ensure proper finishing of the treated layer of material after the initial mixing and processing stage has been completed (AT NO STAGE SHOULD WATER WITHOUT THE NME STABILISING AGENT BE ADDED TO THE LAYER). Sufficient water must be added to the mix to account for loss of moisture during processing, taking into account the equipment to be used and climatic conditions to ensure that compaction starts with the layer preferably at approximately OMC + 0.5%. Sufficient water tankers must be provided to ensure that the processing of the material is a continuous procedure with no stopping to wait for a tanker.
The water tankers involved with NME treatment should only ever transport NME in various stages of dilution as the need dictates. It is recommended that a small percentage of the NME mixture be retained in the tanker in the cases of the use of conventional equipment to treat a “dry” surface before or during compaction when the moisture loss is deemed to be excessive for one or another reason that may occur in practice due to numerous unforeseen circumstances.
All water tankers used for NME treatment must be equipped with a circulating pump system to circulate the diluted NME after standing for an extended period and for circulating during the dilution process. Water tankers must not be fitted with a conventional spraybar but with valves (such as a clam-lock valve) which will not easily clog. The application of the diluted NME is a cold process and there is always the possibility of the diluted NME breaking and causing blockages. Tankers must be properly flushed should they need to stand empty for extended periods (e.g. overnight).

(d) Rollers:

The equipment to be used for the conventional breaking-up and excavation of existing pavement layers will be determined by the size and depth of the pavement section to be processed or excavated, taking into consideration the fact that work may have to be carried out in restricted areas.

One heavy duty grid roller and an adequately powered pneumatic tyre tractor which will pull the grid roller when fully loaded, or an equivalent self-propelled sheep foot roller.

The compaction of a NME base layer is normally achieved with a vibratory smooth drum roller in combination with a pneumatic wheel roller to achieve a surfacing finishing, meeting a strict specification.

(e) General:

Static tanks should be provided to store sufficient NME for the needs of the project. Normally such tanks will have a capacity of between 60 000 and 120 000 litres. Static tanks must be fitted with a circulating pump system which will enable the stored NME to be properly circulated from time to time in the static tank, especially if no NME has been drawn or added for a period of 2 to 3 consecutive days.

C1005 SETTING-OUT AND CONTROL OF THE WORK

The Contractor shall establish his own reference and level beacons for the setting-out and control of the works.
The Contractor shall indicate his own reference and control beacons to the Engineer at least one week before the rehabilitation work is programmed to commence. The Engineer will take control measurements to determine the accuracy and adequacy of the reference/control beacons, and may instruct the Contractor to correct any faulty work and to take and provide such additional measurements and details as may be deemed necessary by him. This survey work will not be measured and paid for directly and compensation for any work involved in staking or setting out will be deemed to be covered by the rates tendered and paid for the various items of work included in this contract.
No payment will be made for any inconvenience or delay caused by compliance with these requirements.

C1106 CONSTRUCTION

(a) Removal of grass and weeds:

Prior to commencing in-situ recycling, all grass, weeds, etc, encroaching into or onto the road surface or growing between the edge of the existing surfacing and kerbs, channels, etc., shall be removed.

(b) Preparing the pavement surface:

Before cold in-situ recycling may commence, the pavement surface shall be clean and free from deleterious material. For the conventional method any asphaltic surface with granular sub-layers and/or cemented-layers will be pre-milled prior to the preparation of the layer.

Extra material shall be spread to the thickness and width as specified. The area to be recycled shall be properly demarcated. No payment will be made for cold, in-situ recycling beyond the required width.

Before cold in-situ recycling may commence, the moisture content of the granular material shall be determined in an approved manner so as to determine the amount of water required to reach optimum moisture content. In the case of the measured moisture content exceeding optimum by more than 0.5%, the layer shall be ripped and left to dry until the moisture content has reached an acceptable level.

(c) Construction in confined areas:

In such an event where any rehabilitation or reconstruction work as specified in this section has to be executed in an area where the width of which is less than 1.0 m or the length of which is less than 50 m and the area is less than 50 m2,it shall be classified as work in restricted areas.

(d) Recovery of bituminous material:

If so required by the design, existing bituminous material shall be milled out as indicated on the drawings. The recovery material shall be transported and stockpiled as specified in Section 3800.

The limits of milling shall be demarcated clearly and these limits shall not be exceeded by more than 100 mm. Areas milled outside the specified limits shall be repaired by the Contractor at his own cost and to the satisfaction of the Engineer.

(e) Spreading of extra material on a layer prior to recycling:

Where the existing pavement layer or surfacing level is too low or existing material has to be spoiled due to unsuitability and where specified or instructed by the Engineer, suitable pavement material shall be added to thelayer to make up the shortfall prior to the recycling the layer. Suitable pavement material for addition to make up a layer shortfall shall consist of naturally available materials as specified or directed by the Engineer.

The extra pavement material including RA shall be spread uniformly over the full area of the underlying shortfall layer by means of an approved type of mechanical spreader to such thickness as to comply with the requirements specified in Clause C1110 after the final compaction. Segregation of the materials shall be avoided and the additional material shall be placed free from pockets of coarse and fine materials. Extra material shall only be spreadon the section to be recycled and only immediately prior to the recycling operation.

(f) Application of NME diluted water:

At no time whatsoever should NME be applied to the layer of material being processed undiluted. Such NME added without dilution with water will be inclined to break too quickly, particularly on a hot day, thereby preventing the NME from being thoroughly mixed throughout the depth of the layer of material. Coating of all the granular particles within the layer will not take place when the NME breaks too early. As a consequence, the in-situ moisture content of the untreated layer must never be so high that it cannot accommodate the NME that has been diluted.

(g) Pre-treating of the exposed base layer:

An appropriately designed NME stabilising agent will not require the pre-treatment of materials to account for “problem” minerals such as Smectites, the Nano-technology automatically addresses the presence of such minerals during the detailed design phase and is specifically designed to neutralise the effect of these minerals. In cases with high contents of specifically identified minerals a pre-treatment may be prescribed using an appropriate Nano-productprior to the stabilisation process. The identification of the need for pre-treatment should be done as part of the detailed design process, testing the mineral composition of available materials to be used in the construction/rehabilitation of a road pavement.

(h) Breaking down of material using conventional methods:

During rehabilitation works, the existing pavement material shall be broken down to the specified depth and processed in place.

The ripped material shall then be broken down in-situ with a fully loaded grid roller hauled by an adequately powered tractor. During the process of grid rolling and breaking the material, the material shall be windrowed constantly and any oversize material shall be removed.

Unsuitable material for sub-base and base shall, as directed by the Engineer, be removed and spoiled and will bepaid under pay item 11.13.

Where sub-base layers need to be constructed, the base material shall be windrowed to the side and the sub-base layer should be inspected first. After inspection by the Engineer the demarcated sub-base area should be reworked and re-stabilised if so required by the Engineer.

(i) Adding diluted NME:

The emulsion tanker supplying the diluted NME shall be equipped with an approved measuring device (dipstick) to enable the site staff to take control dips at intervals specified by the Engineer. The recycling operation will be cancelled/interrupted unless this requirement is met.

The method of introducing the various materials comprising the final mix shall be subject to the Engineer’s approval. Care shall be taken to prevent excessive loss of moisture between the time when the materials are mixed and when they are compacted on the road.

(j) Spreading:

The recycled mix shall be spread and levelled with a motor grader to the required width and to such thickness as to comply with the requirements specified in Clause C1110 after final compaction. Segregation of the materials shall be avoided and the layers shall be free of pockets of coarse or fine materials.

(i) Mixing Recycler:

The recycled base material, extra material, NME diluted in water, shall be thoroughly mixed by the recycling mixing process with plant as specified in Clause C1104.

The NME diluted in water, shall be measured by mass and quantities, calculated in accordance with the formulas given in Clause C1103, and shall be introduced continuously in a controlled manner which is proportional to the rate of

advance to ensure that the correct quantity of each material is added to the full width of the section being recycled.

(ii) Conventional Method:

Blade-mixing by grader is undertaken by using the blade to move the material from side to side. This mixing process is often supplemented with the use of ploughs and/or rotavators. Where the width of the treatment restricts the horisontal movement of the material, extra use should also be made of the grader rippers with specially designed “shoes” welded onto the rippers. Such shoes are in the shape of a horizontal “V”, with the sharp end of the V pointingin the direction of travel of the grader. The rippers with their V-shaped shoes are lowered to the treated depth and the “fast forward” gear of the grader is used to plough through the layer. In this manner, the material is pushed aside,ensuring that proper mixing is achieved, even when working in confined widths.

NME must first be diluted with the compaction water to a residual NME content of between a 1:2 to 1:4 dilution and applied in several applications onto the material. Water tankers are used to apply the NME and the grader(s) must travel directly behind the water tanker, immediately covering the freshly sprayed NME with material, thereby preventing excessive loss of moisture and the NME from breaking. The volume of diluted NME applied is determinedby the residual or NME required, expressed as a percentage by mass of the finally treated layer.

Should weather conditions be particularly hot or dry, then the NME must be diluted with proportionately more water having to be added to the NME.

Care should be taken to ensure that the diluted NME is applied in such a way that no rivulets are formed and that the NME does not run off the layer before it has been mixed in.

During mixing, attention must be paid to the fluid content of the mix. The fluid content is the total quantity of fluid in the mix, including hygroscopic moisture, the diluted NME still in suspension and the water in the NME.

The fluid content should not be so high as to result in deformation of the surface under final compaction. The optimum fluid content determined in the laboratory may be amended, based on on-site observations, to make allowance for the type of compaction equipment being used.

When working with porous material, no dry material should be present at the time of mixing in the NME, since the water absorption of the aggregate may lead to the premature breaking of the NME.

Where the existing asphalt surfacing or cement base layer is being recycled with the underlying gravel layer using conventional construction equipment, the asphalt layer must first be milled off and left in windrow on top of the granular base that is to be recycled. Once the asphalt layer has been milled off in this manner then the base layer can be milled or ripped and broken down. Once the milled asphalt layer and the existing gravel base material have been thoroughly blended, then the additive must be mixed in immediately ahead of the introduction of the diluted NME on the same day.

(k) NME Preparation of treated additive:

The following will need to be determined in advance for input into the Moisture Calculation Sheet: Length, width and depth of section to be stabilised; MOD, OMC and in-situ moisture content; Content of water tanker in litres; Water tanker volume will also need to be calibrated and marked out on a volume measuring gauge.

- Prior to applying any NME to the road, the additive shall be mixed with water in the water tanker to form the diluted NME which, when applied to the soil, will act as a carrier of the diluted NME to the soil fines.

- The Contractor shall determine the rate of dilution of the additive by means of the Moisture Calculation Sheet, which may range from 1 litre of NME to between (5 litres and 40 litres) of water depending on the type of soil, in-situ moisture content and amount of soil treatment required. This calculation sheet shall be submitted to the Engineer on a daily basis for approval both before and after completion of each section to be stabilised. NME stabilised soil will only reach maximum strength once a compacted moisture content of 0,5% above OMC is reached.

In order to reach this target OMC, it will be necessary to apply 2,5 to 4% moisture above OMC (depending on climatic conditions) in the calculation of moisture required. **It is important to note that working the layer under OMC will lead to severe biscuiting and up to 50% reduction in compressive strength** (the appearance of fine "cracking" when compaction commence is normally an indication of a too low a moisture content and a further application of some diluted NME (kept in reserve in the water-tanker) may be needed to increase the surface moisture to achieve the desired compaction densities:

- The diluted NME may be sprayed onto the road surface by means of a spray bar fitted to the water tanker or by hand spraying in places with difficult access.

- Very thorough and complete mixing of the NME with water is essential. Preferably an electrical or petrol driven stirrer must be used. Generally circulating the tank contents using the on board pump provides **inadequate** mixing unless:

    1. The pump is of sufficient capacity to circulate the entire contents of the tank in 15 minutes;

    2. There is no internal baffles in the tank restricting circulation; and

    3. Prior to commencement of spraying, the contents are circulated for at least 20 minutes.

(l) Compaction

The completed compacted layer shall have a minimum in-situ dry density as specified for the specific layer (normally 100% of modified AASHTO for the base, and depending on the structural requirements, for the sub-base a minimum of 95% or 97% of Mod AASHTO). It shall be the responsibility of the Contractor to determine the maximum dry density and Optimum Moisture Content (OMC) of the material to be stabilised for purposes of quality control (compaction control). The Contractor may select any suitable compaction technique to achieve this requiredcompaction, subject to the following conditions:

The initial compaction shall be carried out with plant, which achieves a stability suitable for subsequent compaction without causing undue displacement of the material or deformation of the layers. The rolling pattern shall be designed so as to retain the shape of the layers as far as possible.

The types and number of compaction equipment to be used and the amount of rolling to be done shall be such as to ensure that specified densities are obtained without damage being done to lower layers or structures. During compaction the layer shall be maintained to the required shape and cross-section, and all holes, ruts and laminations shall be removed.

Compaction equipment shall be adequate for obtaining the specified density within the specified time limits.

The compaction equipment and techniques shall be capable of producing the specified surface finish and density without any interruption.

Not more than two (2) hours shall elapse between the time of starting the mixing process and that of starting to compact the material.

From the time when the diluted NME is added and mixed, not more than four (4) hours shall elapse until the compaction has been finally completed.

It is important to note that when adding water to material only diluted NME should be used.
The only time when the water can be used on its own is during the pre-wetting of the completed layer prior to priming.

(m) Rejected work:

The Contractor shall note that should he fail to meet the specified requirements for the cold NME stabilised layer, he shall remove the unacceptable layer and replace it with approved material all at his own expense.

(n) Providing a temporary wearing course:

Immediately after completion of the compaction described in subsection (l), diluted NME shall be applied to the finished surface using a water truck and shall be rolled and slushed by means of steel-wheeled rollers with a mass of not less than 12 tons each, and/or with pneumatic rollers.
The following process is to be followed:

1. Immediately after compaction, slushing of the surface will commence: Spray 1 litre/m² of the dilutedNME onto the surface followed immediately with further compaction by means of a 13 ton vibratory roller which must follow directly behind the water cart. A 22 ton pneumatic tyred roller (PTR) must then follow directly behind the vibratory roller.

2. Turn around and on the same strip have the water cart first drenching the surface with a further 1 litre/m² diluted

NME. This time the pneumatic tyred roller follows directly behind the water cart and the vibratory rollerfollows closely behind the PTR. **It is very important that they must work in close tandem operation at all times, otherwise pick up will occur onto the drum of the vibratory roller**.

3. Continue points 1 and 2 until the total area to be worked is completed.

4. The area treated then is to be kept closed to traffic for 3 to 4 days in order for it to properly set up (until the top 25mm of the layer has dried out). This is dependent on the prevailing weather. In very dry conditions set up can occur after 1 day. The final surface should be smooth, tightly knit and free of undulations, corrugations, holes, bumps or loose material.

5. The application of a Nano-prime when the base has reached a moisture content of 50% of OMC should prevent most damage under conditions of light trafficking in urban areas.

(o) Disposal of surplus material:

Recovered pavement material remains the property of the Employer.

Surplus materials, including waste or oversise material, bladed or skimmed off the road, shall be stockpiled at designated areas within a free-haul radius of 5km as directed by the Engineer.

Should the Employer decide not to use the surplus material, the Contractor shall then dispose of the material.

(p) Checking moisture content prior to surfacing:

The mixing and placing of asphalt or seal will not be allowed if:
(i) free water is present on the working surface; or
(ii) the moisture content of the upper 50mm of the recycled base exceeds 50% of the OptimumMoisture Content (OMC).

C1107 WEATHER LIMITATIONS

No in-situ recycling shall be commenced if the threat of rain is present.

C1108 OPERATIONAL LIMITATIONS

The Contractor shall arrange his in-situ recycling of existing pavement layer operations in such a manner as to minimise the disruption of public traffic. Every effort shall be made to ensure the safety of the travelling public on existing roads through the site of the works at all times. In-situ recycling operations shall be carefully planned and executed in accordance with the following limitations:

(a) Work areas shall be clearly demarcated with traffic signs, delineators and traffic control facilities as specified.

(b) The Work areas shall be planned in such a manner that all recycled pavement layers are compacted as specified in Clause C1106 (l) for a day's production.

(c) No priming shall be done unless the recycled layers have been inspected and accepted by the Engineer.

(d) Within Working areas, the Contractor shall make adequate provision for drainage of milled, excavated and/or asphalt overlay areas where water can pond or be contained against a difference in depth on the roadway. No separate payment will be made for the provision and use of standby pumps and dewatering equipment of cutting of drainage slots and/or channels to effectively drain the roadway surface where instructed by the Engineer in the interests of safety for the travelling public. The Contractor shall make due allowance for this drainage in this tenderedrates.

(e) Delineators shall be placed along each longitudinal step exceeding 30mm between adjacent lanes of the roadway.

The maximum allowable step within a lane open to traffic shall be restricted to 40mm. If, due to plant breakdown or other unforeseen circumstances, a longitudinal or transverse step higher than 20mm occurs within a lane, the strip shall be feathered off by means of compacted asphalt over a distance of 500mm.

- If rain falls during the application process, application must be stopped, the area must be stopped, the area must be sealed by means of a single roller pass and application of treated water shall only recommence once the moisture content of the area has returned to the level it was at before it started raining.

C1109 PROTECTION AND MAINTENANCE

The Contractor shall protect the completed base layer from all damage until the asphalt or seal work is complete. Any damage occurring to the completed base or any defects which may develop due to faulty workmanship, shall be made good by the Contractor at his own expense and to the satisfaction of the Engineer.

Repairs shall be made in a manner approved by the Engineer to ensure an even and uniform surface.

During working and construction of the base layer, precautionary measures shall be taken to prevent kerbs and channelling and concrete work from being damaged or shifted. Care shall be taken to protect all precast units from chipping and breakage. Concrete kerbing and channelling, as well as other structures adjacent to the road, shall be protected against staining, by NME product. Any work stained by NME shall be broken down and replaced, unless all such NME is completely removed so as not to show any stains. Painting over stained work will not be allowed.

Where the cold in-situ recycling process is to be carried out at existing structures, care shall be exercised to avoid damage to concrete elements, expansion joints, manholes, catch pitts, etc. Damage caused to any element forming part of the permanent works shall be repaired at the Contractor's cost.

The Contractor shall make good careless or excessive demolition at his own expense. New construction shall be in accordance with the drawings and the Specifications. The Contractor will be held responsible for the timelyadjustment of all covers and frames in advance of surrounding construction, whether they are indicated on the drawings or by the Engineer or not. No claims for delays arising from the failure of the Contractor to effect the necessary adjustments in good time will be allowed.

C1110 CONSTRUCTION TOLERANCES AND FINISH REQUIREMENTS

(a) Construction tolerances:

The applicable construction tolerances are the relevant tolerances indicated in Clause 3405. Where the existing granular base abuts kerbs or channels or new jersey barriers, the new work shall extend to the edge of these facilities.

Unless otherwise specified, the recycled base shall be constructed to the existing levels, cross-section profile and cross-fall to allow for a surfacing layer.

(b) Nano-Modified (bitumen) Emulsion (NME) stabilising agents:

The average rate of application of the diluted NME as measured at operating temperature in the recycling plant and water tanker shall be within 5% of the specified rate of application.

(c) Uniformity of mix (chemical stabilisation):

No chemical stabilisation agent is required with NME unless so ordered by the Engineer.

(d) Statistical judgement schemes:

Routine inspections and tests will be carried out by the Engineer to determine the quality of the materials and workmanship for compliance with the requirements of this section.

The statistical judgement schemes to be used to determine whether the requirements specified are being complied with shall be those set out in Section 8200 (scheme 2).

C1111 TRIAL SECTIONS

Where ordered by the Engineer, the Contractor shall execute trial cold in-situ recycling on the various materials to be reprocessed.

Trial sections shall be carried out at locations indicated by the Engineer.

C1112 WORK OUTSIDE NORMAL WORKING HOURS

Any work carried out outside normal working hours must be approved by the Engineer, and the Contractor shall give the Engineer at least 48 hours' notice of his intention to do work outside the normal working hours. The closure of traffic lanes will only be permitted during these times. The provision and layout of lighting for the works and warning lights for the accommodation of traffic shall be approved by the Engineer. No additional payment will be made for theprovision of warning lights for work outside normal working hours. The Contractor shall allow for the provision, erection and maintenance of additional items required in his tendered rates.

C1113 TESTING

(a) Testing:

The Contractor shall give the Engineer at least 24 hours' notice of his intention to recycle, so that the actual process can be controlled by the Engineer. Unless otherwise agreed in advance the Contractor shall only recycle when the Engineer or his representative is present.

(b) Test Methods for determining UCS and ITS values:

The following test methods shall be used to determine the UCS and ITS values.

- To determine the maximum dry density TMH 1 method A7 or SANS 3001 GR30
- To determine the unconfined compression strength (UCS) TMH 1 method A16T or SANS 3001 GR54
- To determine the indirect tensile strength (ITS) TMH 1 method A16T or SANS 3001- GR54

In all the above test methods the +37.5 mm material must be screened off and discarded. The aggregate passing the 37.5 mm sieve and retain on the 19.0 mm sieve must not be crushed and must be used in the testing process. A ph test must be performed to determine the acidity/alkalinity levels of the material.

The curing and testing process of the 150 mm diameter samples shall be as follows:

1. No cement or lime added to the material.

2. The prepared 150mm diameter samples as per TMH (Mehod A14) with no plastic covering. Samples are cured for 24 hours in sunlight (or cured for 24 hours in an oven at 30°C) before being subjected to a "rapid curing" process in an oven (for 48 hours at 40 - 45°C) (temperatures in the oven should NOT exceed 50°C).

3. After 48 hours the briquettes must be removed from the oven and allowed to cool off for twenty four (24) hours. This is preferably to be done in sunlight (or 24 hours at 30°C in oven).

4. Two (2) briquettes must be crushed to determine the ITS and UCS values. The values obtained are called the DRY ITS and the DRY UCS values.

5. Two (2) briquettes must be placed in a bath of water with a temperature of 22°C - 25°C for four (4) hours and thereafter removed from the bath and allowed to drain off excess water before determining the ITS and UCS values. The values obtained are called the WET ITS and the WET UCS values.

C1114 MEASUREMENT AND PAYMENT

Item			Unit
C11.01	**(a)**	**Establishment of cold in-situ recycling equipment/planton site**	lump sum
	(b)	**Establishment of Conventional equipment on site**	lump sum

The tendered lump sum shall include full compensation for the provision of any number of recycling machine(s)/plant on the section of the site and the subsequent removal thereof, including additional plant required for carrying out cold in-situ recycling operations.

The lump sum will become payable after the cold in-situ recycling work has been completed and the equipment has been removed from the site.

Payment will not distinguish between the number of recycling machines or conventional units of equipment brought onto and/or removed from the site. No payment will be made for the replacement of defective plant.

Item			Unit
C11.02		**Cold in-situ recycled granular layer treated)**	
(a)		Using a recycler	
(i)		Base layer (depth to be specified) compacted to 100% Mod AASHTO density using a Nano-modified (bitumen) emulsion (NME)…	cubic metre (m3)
(ii)		Sub-base (depth to be specified) compacted to 95% or 97% Mod AASHTO density) using a Nano-Modified (bitumen) emulsion (NME)	cubic metre (m3)
(b)		Using conventional plant	

(i) Base layer (depth to be specified) compacted to 100% Mod AASHTO density using a Nano- Modified (bitumen) emulsion (NME) ..... cubic metre (m3)

(ii) Sub base (depth to be specified) compacted to 95% or 97% Mod AASHTO density) using a Nano-Modified (bitumen) emulsion (NME) ..... cubic metre (m3)

The unit of measurement shall be the cubic metre of pavement recycled to provide the recycled base and or sub-base layer as specified.

The rate tendered shall include full compensation for the provision of all plant, labour, materials and all other incidentals necessary to produce the finished layer as specified but excluding the provision of the Nano-Modified (bitumen) emulsion (NME) which shall be measured and paid for under item C10.03. The bitumen emulsion will consist of a SS60 anionic emulsion with a Sodium Hydroxide (Vinsol resin) emulsifier

The tendered rate shall also include full compensation for the milling of existing pavement layers, blending of the materials in the nominal mix ratios specified, supply, diluting Nano-Modified bitumen emulsion in water and mixing of diluted Nano-Modified bitumen emulsion, spreading and final blading of the recycled mix, compacting the material to the specified density and protecting and maintaining the work in accordance with the specifications.

The tendered rate shall also include full compensation for the cleaning of the surface and the referencing of lane and control survey markings as specified.

Where ordered by the Engineer for the recycling of pavement layers to depths other than specified, the payment will be made on a pro rata basis between the tendered rates for nominal depths scheduled.

Item		Unit
C11.03	**NANO-MODIFIED BITUMEN EMULSION .....**	Litre (ℓ)

The unit of measurement shall be the litre of Nano-Modified bitumen emulsion (NME) applied as specified or as instructed by the Engineer.

The tendered rate shall include full compensation for providing, diluting, expansion and applying the stabilising agent, irrespective of the prescribed rate of application. The emulsion specified will consist of a SS60 anionic emulsion using a Sodium Hydroxide (Vinsol resin) emulsifier.

Item	Unit
C11.04	**Chemical additive**

No chemical additives will be required with a NME stabilising agent.

Item	Unit
C11.05	**Pre-treating the base layer with a Nano-product**

No pre-treatment of lime will be required with a NME stabilising agent. Some minerals may require pre-treatment with an appropriate Nano-product Payment to be similar to Items C10.02 and 10.03.

Item		Unit
C11.06	**Blading of surplus material to windrow .....**	**cubic metre (m3)**

The unit of measurement shall be the cubic metre of surplus material bladed to windrow as specified by the Engineer. The tendered rate shall include full compensation for all labour equipment and any other incidentals required for blading to windrow of surplus material with a motor grader.

Item		Unit
C11.07	**Removal from site of surplus material….....**	**cubic metre (m3)**

The unit of measurement shall be the cubic metre of surplus material removed.
The volume shall be determined as prescribed by the Engineer and shall be the loose volume in stockpiles or its equivalent measured in hauling vehicles. Accurate load and haul sheets shall be kept on site and submitted to the Engineer. The tendered rate shall include full compensation for loading and transporting the surplus material to a designated spoil or stockpile site within a 5km radius.

Item		Unit
C11.08	**Construction of temporary wearing course .....**	**square metre (m²)**

The unit of measurement shall be the square metre of recycled granular base slushed in accordance with the requirements of section C1106 (n) of the Project Specification and the tendered rate shall include full compensation therefore.

Item		Unit
C11.09	**Trial sections were ordered (extra over item**	
C11.02 and C11.03)…		**square metre (m²)**

The unit of measurement shall be the square metre of recycled pavement layers as ordered.
The tendered rate shall include full compensation for the construction of the trial section of recycled pavement layers complete as specified.

Item		Unit
C11.10	**Extra over Item C11.02 for adding extra materialto the layer**	
(a)	Gravel Base (G2)…	cubic metre (m3)
(b)	Gravel sub base (G5)…	cubic metre (m3)
(c)	RA…	cubic metre (m3)

The unit of measurement shall be the cubic metre of material added on the instruction of the Engineer, which quantity shall be taken as 70% of the loose volume measured in trucks, unless instructed by the Engineer that the quantity be determined by way of cross-sections.

The tendered rate shall include full compensation for procuring and adding the specified material to the layer, for spreading the material, for all haul and other incidentals to add the material to the layer.

Item		Unit
C11.11	**Milling out existing bituminous material with anaverage milling depth:**	
(a)	Not exceeding 30mm.....	cubic metre (m3)
(b)	Exceeding 30mm but not exceeding 60mm	cubic metre (m3)
(c)	Exceeding 60mm	cubic metre (m3)
	Measurement shall be as per pay item 38.02	

Item		Unit
C11.12	**Providing the milling machine on the site (size indicated). .....**	number (No)

Measurement shall be as per pay item 38.14

C11.13	**Break down of in-situ material.....**	cubic metre (m3)

The unit of measurement shall be the cubic meter of material measured after compaction. The quantity measured shall be computed by method of average end areas from levelled cross-sections prepared from the existing road surface before any ripping or breaking down of the existing surface and base-course has taken place.

All measurement shall be neat and material placed in excess of the authorized cross-section will not be paid for.
The tendered price shall include the ripping, breaking down, preparing, processing, shaping and watering the materials to the specified densities.

SECTION D1000: LABOUR AND TRAINING REQUIREMENTS

D1001 SCOPE

It is a requirement that certain work be executed in such a manner as to maximise the uses of labour, it is therefore the intention that work be provided for Local Labourers of the local communities during the execution of the Works. All unskilled workers (100%) are to be sourced from the local community and 50% or the maximum amount of skilled workers, must be sourced from the local community. Where practical and economically feasible, construction work should be undertaken using labour-intensive methods, employing local labour.

This section covers aspects that relate to the engagement and training of labour recruited from local communities in the execution of the contract works as an integral part of the Government's broad-based black economic empowerment programme.

D1002 DEFINITIONS

The definitions given in the conditions of contract, the contract data and the works specifications, together with the following additional definitions shall, unless the context dictates otherwise, apply:

(a) '**Key Personnel**' means all contract managers, site agents, materials and survey technicians, trainers, supervisors, foremen, skilled plant operators and the like, and all other personnel in the permanent employof the contractor or subcontractor who possess special skills and/or who play key roles in the contractor's or subcontractor's operation.

(b) '**Labourer**' means a worker statutorily defined as employees in the Basic Conditions of Employment Act, 1997, who is temporarily or permanently employed by the contractor and subcontractors to perform prescribed work on this contract. 'Labour' means labourers or workers who are not part of key personnel of the contractor nor his subcontractors.

(c) '**Labour Register**' means the list of available local labourers compiled by the community liaison officer in accordance with the results of his negotiations with the contractor and the local community subsequent to the award of the contract.

(d) '**Local Labour'** means labourers or workers who resides permanently within the local communities in the target area(s) as defined by the employer in the project specifications and who are temporarily or permanently employed by the contractor and subcontractors and normally paid on an hourly rate basis to perform prescribed work tasks on the contract. Local Labour would also be registered on the Expanded Public Works Programme (EPWP).

(e) '**Wage**' means the actual amount paid periodically to labour employed by the main contractor and his subcontractors after all deductions made in terms of the law (e.g. UIF) and exclusive of all company overheads and other benefits such as protective clothing, transport etc.

D1003 CONTRACTUAL REQUIREMENTS

The contractor shall comply with the following relevant legislation:

(i) Basic Conditions of Employment Act 75 of 1997
(ii) Labour Relations Act 66 of 1995
(iii) Employment Equity Act 55 of 1998 (Chapters 1 and 2)
(iv) Occupational Health and Safety Act 85 of 1993
(v) Compensation for Occupational Injuries and Diseases Act 130 of 1993
(vi) Skills Development Act of 1998

D1004 COMMUNITY PARTICIPATION

(a) General:
Immediately after the award of the contract, the employer shall, at his own cost, take all necessary actions to advertise within the local communities of the fact that the contract will provide temporary employment opportunities and preference will be given to the use of local labour on the contract.

(b) Public Liaison Committee:
Upon the award of the contract the contractor shall without delay consult with the local communities and establish a public liaison committee (PLC) as a communication structure that interacts with all parties involved with the project. The composition of the PLC comprises representation by the employer, the contractor, the Engineer and formal structures within the communities. The contractor is advised to make use of established community communication channels and appoint from amongst his site personnel a responsible person to participate in the PLC business.

Some of the elements of construction activity that should be determined by the PLC are:

(i) Compilation of a labour register of available local labourers, from which the contractor can select and appoint temporary contract workers required for work included in the contract.
(ii) Categories, skills and numbers of local labourers
(iii) Categories, skills and details of local enterprises
(iv) Training requirements for local enterprises and labourers
Should the locality and size of the project warrant the need for a community liaison officer (CLO), such appointment will be made by the contractor as part of the contractor's staff, as specified in clause D1005 of these specifications.

D1005 COMMUNITY LIAISON OFFICER (CLO)

(a) General:
The contractor shall, if instructed to do so, appoint a CLO as a member of the contractor's management personnel, after consultation with the local community, the Engineer and the employer. The primary function of the CLO shall be to assist the contractor with the selection and recruitment of local labour, to represent the local community in matters concerning the use of local labour on the works, and to assistwith and facilitate communication between the contractor, the Engineer and the local communities.

(b) Responsibilities:
The CLO shall:

(i) be available on site on a day-by-day basis between the hours agreed on by the contractor, the employer and the Engineer from time to time;
(ii) determine in consultation with the contractor and the Engineer the labour requirements with regard to the numbers and skills;
(iii) assist in and facilitate the identification of suitable temporary labour and the establishment of the labour register;
(iv) assist in the identification and screening of labourers from the local community in accordance with the contractor's requirements;
(v) attend all meetings in which the local community and/or labourers are present or are required to be represented;
(vi) inform temporary labourers of their conditions of temporary employment, and inform temporary labourers as early as possible when their period of employment will be terminated;

(vii) assist the contractor with determining the training needs of the temporary labourers and the identification of suitable trainees for relevant skills training;
(viii) assist in maintaining good labour relations, and when applicable partake in labourer grievance and dispute procedures;
(ix) attend disciplinary proceedings to ensure that hearings are fair and reasonable;
(x) keep a daily written record of his interviews and community liaison activities;
(xi) carry out specific tasks ordered by the Engineer;
(xii) perform such other duties as required and agreed upon between all parties concerned.

(c) Appointment:
The identification of suitable candidates (maximum 5; minimum 3) for the CLO position shall be resolved by the relevant regional / district / ward councillors. Should suitable candidates not be identified within two weeks of the date of request, the contractor shall be allowed to seek candidates from the relevant regional / district / sub-council job-seekers database. The final selection and appointment of the CLO in terms of the contract shall be the responsibility of the contractor.

The period of appointment of the CLO shall be as stated in the contract for temporary employment as a community liaison officer referred to below. The date of commencement of temporary employment of the CLO shall be as agreed with the Engineer.

It is required, therefore, that the contractor enters into a contract of temporary employment with the selected CLO, the contracting parties being the contractor and the CLO.

The remuneration of the CLO shall be determined jointly by the contractor, the Engineer and the employer. The CLO shall only be employed and paid for the period in which the duties of the CLO are required as agreed on by the Engineer and the contractor.

D1006 EMPLOYMENT OF LOCAL LABOUR

(a) General:
Labourers of the local community required by the contractor shall be recruited for work to enable the contractor to comply with the specific minimum target value set for the contract participation goal in the contract.

(b) Selection of local labourers:
The contractor shall advise the Engineer in writing of the various categories of local labourers required for construction and the number of local labourers required in each category, together with the personal attributes which he considers desirable that each category of local labourers shall possess, taking due cognizance of the provisions of the contract relating to training.

The contractor shall select local labourers from the applicants in the labour register, taking cognizance of the following principles:
(i) No potential local labourer shall be precluded from being employed by the contractor on the execution of the works by virtue of his lack of skill in any suitable operation forming part of the works unless
(ii) all available vacancies have been or can be filled by labourers who already possess suitable skills, or
(iii) the completion period allowed in the contract, or the remaining portion of the contract period (as the case may be) is insufficient to facilitate the creation of the necessary skills;
(iv) Preference shall be given to the long-term unemployed and single heads of households;
(v) The contractor shall, in so far as is reasonably practicable, accommodate the applicants' expressed preferences regarding the types of work for which they are selected;
(vi) The selection process shall make provision for, but shall not be limited to, the inclusion of disabled, who are deemed capable to perform selected tasks, youths and women.

After making his selection, the contractor shall advise the Engineer thereof in writing, and the Engineer has the right to call a meeting with the public liaison committee for the purpose of ratifying the contractor's selection. The contractor shall attend such meeting and where reasonably required, shall motivate his selection. Should the Engineer or the local community make reasonable objection to the selection of any particular applicant by the contractor, the contractor shall not employ such applicant and shall select another suitable applicant acceptable to the Engineer and the local community as a replacement of the rejected applicant, in order to finalise the composition of the workforce.

(c) Terms and conditions of employment:

The statutory Department of Labour Government Notice No. R204 of 2 March 2001: Basic Conditions of Employment Act (No. 75 of 1997): Sectoral Determination 2: Civil Engineering Sector, South Africa as amended shall apply in respect of any employer or employee associated with the contract. In particular the contractor shall pay his labour at least the minimum wage prescribed in the statutory legislation.

All temporary local labour shall be employed by the contractor in accordance with the abovementioned statutory legislation conditions which are consistent with those set out below:

(i) Engagement shall be of temporary nature for a period not exceeding the duration of the contract. The duration of the employment shall nevertheless be as long as possible.
(ii) The contractor shall in respect of every temporary worker employed by him in terms of the contract, pay in full all amounts as may be due and payable in terms of the Workmen's Compensation Act.
(iii) At the earliest opportunity the contractor shall give notice to the temporary workers of the termination of the project on which they are engaged, provided always that such notice shall not be less than one week.
(iv) Any temporary worker may be summarily dismissed by the contractor for any of the following reasons:
(v) Being under the influence of alcohol or drugs whilst on the site;
(vi) Theft of any materials, plant, tools and equipment;
(vii) Gross insubordination;
(viii)Any wilful or grossly negligent act or omission which constitutes a threat to person or property;
(ix) Any other reason with which the Engineer may agree that it warrants summary dismissal.
(x) The dismissal of a temporary worker shall be effected in accordance with the applicable statutory requirements.
(xi) The contractor shall enter into a written agreement with each temporary worker engaged by him in terms of the contract. The conditions of employment of the temporary worker and his rate of remuneration shall be set out fully and clearly in the agreement, and the provisions of the agreement shall be strictly in accordance with the statutory legislation.
The contractor shall provide satisfactory and suitable scheduled daily return transport free of charge for the labourers recruited in the local communities between agreed assembly points in the residential area of the local communities and the areas on the site where the labourers or groups of labourers have to report for the various tasks allotted to them. No separate payment will be made for providing this transport and the contractor shall allow for the cost thereof in his tendered rates.

D1007 TRAINING

(a) General:

Where training is specified in the contract, the contractor shall implement a formal training programme in which the various skills required for the execution and completion of the works are imparted to the workers in a programmed and progressive manner. Where appropriate, the training may also include skills which are in short supply amongst the community and may contribute towards sustainable employment or income generation.

Training shall take place during normal working hours, or as agreed with the trainees, and the contractor shall make adequate allowance in his programme of work to accommodate the training to be provided in terms of the contract and shall ensure that the workers are available at the appropriate times to undergo such training.

Before commencing with any formal training, the contractor shall submit full details of the formal training, which he intends to implement on the contract, in writing to the Engineer for approval of:

(i) The name of the training institution, trainers and course programme.
(ii) Each type of training and course content synopsis.
(iii) The manner in which the training is to be delivered.
The contractor's formal training schedule shall be subject to the approval of the Engineer, and the contractor shall, if so instructed by the Engineer, alter or amend the training schedule and its contents to suit changing conditions on the site and changes in the contractor's programme of work.

(b) Identification of candidates:

The contractor shall identify candidates from amongst the temporary local labour who, in his opinion, show initiative or aptitude or display the potential to benefit from formal training, as may be provided for in the contract, and shall make recommendations to the Engineer in this regard. The final list of candidates shall be decided between the contractor and the Engineer, and those selected shall receive formal training during the construction period.

Candidates having the potential to become supervisors shall be selected from amongst the temporary local labour and be given additional formal training as outlined above. This selection will take place, once

the initial formal skills training has been completed and after monitoring of their performance and it is considered beneficial to the progress of the works.

(c) Formal training:

The formal skills training programme to be implemented by the contractor shall comply with the following minimum standards:

(i) Be accredited by the Construction, Education and Training Authority (CETA) or other institution recognized by the Department of Labour, as being appropriate for this project.
(ii) Be delivered by suitably qualified and experienced trainers accredited to do so.
(iii) Be delivered in the modules as described below. The actual training needs, training agency and programme shall be agreed with the Engineer prior to implementation.
The contractor shall facilitate in the delivery of training, by instructing and motivating the local labour, supervisors and subcontractors regarding attendance and participation.
Certificates affirming the successful participation in the various courses shall be presented to each attendant.

(d) Training requirements:

Temporary local labour will receive the following training as part of the contractor's general obligations under this contract:

(i) Compulsory training
Each temporary local labourer shall be given the following compulsory training as soon as possible after being employed:
(1) Environmental awareness
(2) Safe working practices
(3)Roadside safety awareness

(e) Engineering skills training:

Selected temporary local labour shall be given the opportunity of completing at least one engineering skills work activity module which would be beneficial for the tasks allotted to them, with further engineering skills training being given on merit.

As may be agreed with the Engineer, training may also include skills not directly related to the current construction activities but which will have longer term benefits for the communities, such as:

(i) Brick laying;
(ii) General carpentry;
(ii) Drivers licence.

(f) Life skills training:

Where so approved by the employer, temporary local labour may be given the opportunity to receive training in life skills such as:

(i) HIV / Aids awareness;
(ii) Financial skills.
Training requirements for each particular project shall be determined in accordance with the CETA training programmes and as directed by the Engineer. The employer reserves the right to prescribe and/or limit the proposed training required on the contract.

The contractor shall be responsible for the provision of everything necessary for the delivery of the skills training programme, including the following:

(iii) Sufficient skilled, competent and accredited trainers to deliver the training programme to all workers in accordance with the training programme;

(iv) A suitably furnished venue (if required);
(v) Transport of the attendants (as necessary);
(vi) Tools, equipment and teaching aids;
(vii) Stationery and all other necessary materials.

The contractor shall allow for each relevant activity at least one (1) week in his programme for the training of workers. Training will be required during the startup phase of the project for compulsory training modules as well as formal engineering skills work activity training before commencing with the relevant work activities. Due allowance must also be made for the newly trained worker's learning curve as well as the training of replacements.

The contractor shall keep comprehensive records of the training given to each worker as well as the nature and number of work tasks executed by the worker and whenever required shall provide copies of such records to the.

The contractor shall, in so far as it is reasonable and practical taking due and cognizance of the nature of the works to be executed at any given time, use trained workers on those aspects of the works for which they have been trained.

(g) Non-compliance:

If at any stage the Engineer notifies the employer in writing that the contractor is not complying with the requirements of the contract in respect of the training to be provided to black enterprises engaged as subcontractors and temporary local labourers, then the employer is entitled to appoint competent firms or persons to conduct the specified training at the contractor's expense and the amounts paid to such firms or persons will be deducted from the contractor's payment.

(h) Training venue:

If so specified in the contract, a suitable on-site training venue shall be provided by the contractor to the satisfaction of the Engineer. The training venue shall comply with the specifications for site offices as specified in the specifications. Measurement and payment of the training centre and the required equipment shall be as specified in the project specifications.

D1008 MEASUREMENT AND PAYMENT

Item		**Unit**
D10.01	**Community participation:**	
(a)	Cost of community participation and public liaison.....	provisional sum
(b)	Handling costs and profit in respect of subitem (a)….....	percentage (%)

The provisional sum shall be used to cover the direct costs incurred by the contractor in establishment of a public liaison committee, attending to meetings and community liaison matters. The rate of compensation shall be at a fair rate agreed by the Engineer. In accordance with clause 6.6.1 of the general conditions of contract, the tendered percentage of subitem (b) shall include full compensation for all handling costs and profit of the contractor in connection with subitem (a).

The assistance provided by the contractor to the community liaison officer in the form of in-task training, arranging service providers, appointments and services shall not be paid from the provisional sum. The contractor's costs to render such assistance shall be deemed to have been included in his rate offered for the contractor's general obligations, time related obligations.

Payment under the PC sum provided in subitem (a) to cover the employment and remuneration of the community liaison officer shall be effected in accordance with the provisions of clause 6.6.2 of the general conditions of contract.

Payment under the PC sum provided in subitem (b) to cover costs incurred in the provision of transport for the community liaison officer as agreed upon by employer, the Engineer and the contractor shall be effected in accordance with the provisions of clause 6.6.2 of the general conditions of contract.

Item		**Unit**
D10.02	**Training:**	
(a)	Cost to company of temporary local labourers for off-site training during which no productive work is executed	provisional sum
(b)	Formal training courses for temporary local labourers.....	prime cost (PC) sum
(c)	Contractor's charges to allow for handling costs and profit in respect of subitem (b)…	percentage (%)
(d)	Training venue.....	provisional sum

Payment under the provisional sum provided in subitem (a) shall be effected in accordance with the provisions of clause 6.6.3 of the general conditions of contract and shall cover the wages and salaries, inclusive of company mark-up on labour, of temporary local labourers for the periods during which they receive training off-site and are thus not available for the execution of work. It shall also cover the cost of any training related transport, materials, and equipment provided by the contractor.

Payment will only be made for temporary local labour that attend and successfully complete each course of the approved training programme. No payment, nor pro rata payment, shall be made for individual trainees that, once selected, do not attend or only partially complete structured training courses. The contractor's own permanent staff may attend the courses provided. However, such attendants from the contractor's staff shall not be considered for measurement and payment purposes.

Payment under the PC sum provided in subitem (b) to cover costs incurred for approved formal training courses presented by accredited institutions shall be effected in accordance with the provisions of clause 6.6.2 of the general conditions of contract. The payment shall cover the applicable course fees as agreed to by the Engineer.

The tendered percentage in sub item (c) is the percentage of the amount actually spent under subitem (b) that will be paid to the contractor in full compensation for the contractor's handling costs and profit in respect of subitem (b).

Item		Unit
D10.03	**The contractor's obligations in respect of managing a team of 6 local labours**	**day**

Payment of the day rate tendered, under the various work categories, shall include full compensation for all costs related to the organization and management of the local labour, including cost of registration with EPWP programme, medical assessments and compliances with all relevant legislation.

The day rate tendered will be paid monthly in equal instalments for the original contract period only.

ADDITIONAL SPECIFICATIONS

PART E1000 : COLD IN SITU RECYCLING

CONTENTS

E1.1 SCOPE

This section covers work required for the rehabilitation of the upper pavement layers using the cold in situ recycling process. The cold in situ recycling process includes the break up, the addition of new material, adding water, bituminous stabilisers, chemical additions and the mixing thereof in situ to produce a homogenous mixture (using a purpose built machine), which is spread and compacted in a continuous operation.

The Contractor shall note that should he fail to meet the specified requirements for the cold in situ recycled layer, he shall remove the unacceptable recycled layer and replace it with approved granular base all at his own expense.

E1.2 MATERIALS

Materials from existing pavement layers shall be classified as follows for excavation and processing purposes:

(a) Existing Bituminous Material:

Bituminous surfacing shall be asphalt surfacing and bituminous seal from the existing layers. Where the asphalt surfacing and bituminous seal is recycled together with the underlying layers, the mixture will not be classified as bituminous material.

(b) Granular Material:

The base and sub base pavement layers in the existing pavement shall be classified as granular materials.

Granular material shall include crushed stone and natural gravel and can consist of cemented or non cemented material. Crushed stone obtained from existing pavements and processed as gravel material will be paid for as gravel material and not as crushed stone.

(c) Extra Material:

Extra material as specified in clause B3403 shall consist of:

(i) Gravel base

The gravel base material shall be a G5 type material and shall comply with Section 3400 of the Standard Specifications.

(ii) Crusher Dust

Crusher dust shall be an approved crusher sand obtained from a parent rock. The grading shall comply with specification as given in Table 4302/11 of the Standard Specification.

Payment for the addition of extra material shall be made under Pay Item B34.06.

(d) Bituminous Stabilisation:

(i) Bituminous Stabilising Agents:

The bituminous stabilising agent shall be one or more of the following agents specified on the drawing, in the schedule of quantities, or as may be instructed by the Engineer, and shall comply with the appropriate SABS (SANS) specification.

Emulsion:

Anionic	60 % stable grade bitumen emulsion	SABS 309 (SANS 309)
Cationic	65 % stable grade bitumen emulsion	SABS 548 (SANS 548)

(ii) Additive for Bituminous Stabilisation:

The stabilising additive shall be one or more of the following agents specified on the drawings, in the schedule of rates or ordered by the Engineer and shall comply with the appropriate SABS / SANS specification.

- Road lime SABS 824 (SANS 824)
- CEM 1 42,5N sourced from
  Riebeeck West SABS EN 197-1 (SANS 50197-1)

(iii) Water:

Water used for diluting emulsions shall be clean and free from any salts that will cause the emulsion to break during dilution, and shall be tested for compatibility with the prescribed stabilising agent.

E1.3 COMPOSITION OF RECYCLED MIXES

The recycled granular base mix shall consist of existing bituminous material, granular material from existing pavement layers, extra material where required, bituminous stabilising agent and stabilising additives.

The final composition of the mix shall be determined by the Engineer and any adjustments to the mix constituents that may be required during construction shall be authorised by the Engineer. The Engineer reserves the right to adjust the composition of the mix at any time should he/she deem it necessary. The Contractor shall obtain the final mix proportions from the Engineer before any materials are ordered.

The following formulas shall be used to calculate the quantities of emulsion and cement required in the recycling process:

Emulsion (litres) = [(Max. dry density x volume) / 100] x % emulsion specified

Cement (kg) = [(Max. dry density x volume) / 100] x % cement specified

The Engineer shall issue the Contractor with the values for maximum dry density of the recycled material.

E1.4 PLANT AND EQUIPMENT

(a) Recycling Equipment:

Only approved cold in situ recycling equipment may be used. The plant shall be so equipped that it will be able to recycle pavement layers to depths up to at least 300 mm in one operation. The plant shall be so equipped that the bituminous stabiliser, stabilising additive and water can be added uniformly in a calibrated and controlled manner directly to the material being recycled. Width reduction must be possible on the application nozzles when overlap recycling is done. The recycling depth shall be controlled by approved means.

The direction and speed of the recycling machine and the speed of rotation of the scarifying drum shall be adjustable so as to obtain the required grading and sufficient mixing of all the components of the recycled material. The machine shall be capable of making a neat vertical cut at the outer edges when recycling the layer.

(b) General:

The equipment to be used for the conventional breaking up and excavation of existing pavement layers will be determined by the size and depth of the pavement section to be processed orexcavated, taking into consideration of the fact that work may have to be carried out in restricted areas.

Only approved cutting or sawing equipment may be used for cutting or sawing the asphalt layers. The equipment shall be capable of cutting layers to the specified depth in one operation without fragmenting the material, and in straight lines within the required tolerances.

E1.5 SETTING OUT AND CONTROL OF THE WORK

The Contractor shall establish his own reference and level beacons for setting out and control of the works.

The Contractor shall indicate his own reference and control beacons to the Engineer at least one week before the rehabilitation work is programmed to commence. The Engineer will take control measurements to determine the accuracy and adequacy of the reference/control beacons, and may instruct the Contractorto correct any faulty work and to take and provide such additional measurements and details as may be deemed necessary by him. This survey work will not be measured and paid for directly and compensation for any work involved in staking or setting out will be deemed to be covered by the rates tendered and paid for the various items of work included in this contract.

No payment will be made for any inconvenience or delay caused by compliance with these requirements.

E1.6 CONSTRUCTION

(a) Removal of Grass and Weeds:

Prior to commencing in place recycling, all grass, weeds, etc, encroaching into or onto the road surface or growing between the edge of the existing surfacing and kerbs, channels, etc, shall be removed.

Preparing the Pavement Surface

Before cold in situ recycling may commence, the pavement surface shall be clean and free from soil or other deleterious material.

All work as specified in Section B2200 shall have been completed. Extra material (if required) shall be spread to the thickness and width as specified. The area to be recycled shall be properly demarcated. No payment will be made for cold, in situ recycling beyond the required width.

In situ moisture

The Contractor shall determine the in situ moisture content of the granular base course at least 48 hours before recycling commences. The Contractor must satisfy himself/herself that the in situ moisture of the material prior to recycling is at a level, which will result in achieving the required compaction of 98% of modified AASHTO density using available compaction techniques and equipment. Provision is made in the schedule of rates (pay item E10.09) for ripping the pavement layer (to a depth specified by the Engineer), leaving the material to dry for a period of 24 hours and shaping and recompacting the material to 98% of modified AASHTO density should this become necessary. The final decision to let the material dry out shall lie with the Engineer.

(b) Construction in Confined Areas:

It may be necessary for the Contractor to work within confined areas. The method of construction in these confined areas will depend largely on the Contractor's constructional plant. However, the Contractor shall note that measurement and payment will be in accordance with the specifications and drawings irrespective of the method used, and that the rates and amounts tendered shall be deemed to include full compensation for any special equipment or construction methods or for any difficulty encountered in working in confined areas and narrow widths, and at or around obstruction, and that no extra payment will be made nor will any claim for payment be considered on account of these difficulties.

In general where the cold in situ recycling process is to be carried out at existing structures or alongside kerbs and channels and/or median barriers, no separate payment will be made for workingin close proximity to these elements and the Contractor shall include for having to work close up to the elements in his tendered rates for the cold in situ recycling process.

Where any rehabilitation or reconstruction work as specified in this section has to be executed in an area the width of which is less than 1,0 metres or the length of which is less than 50 metres and the area is less than 50 square metres, it shall be classified as work in restricted areas. No separate payment shall be made for work in restricted areas.

(c) Recovery of Bituminous Material:

Where ordered by the Engineer, the existing bituminous material shall be milled to a depth as specified. The recovered material shall be transported and stockpiled as specified in Section 3800.

The limits of milling shall be demarcated clearly and these limits shall not be exceeded by more than 100 mm. Areas milled outside the specified limits shall be repaired by the Contractor at his own cost and to the satisfaction of the Engineer.

(d) Spreading of Extra Material on a Layer prior to Recycling:

Where the existing pavement layer or surfacing level is too low and where specified or instructed by the Engineer, suitable pavement material shall be added to the layer to make up the shortfall prior to recycling the layer. Suitable pavement material for addition to make up a layer shortfall shall consist of new aggregate or granular base material as specified or directed by the Engineer.

The extra pavement material shall be spread uniformly over the full area of the underlying shortfall layer by means of an approved type of mechanical spreader to such thickness as will comply with the requirements specified in Clause E10 after the final compaction. Segregation of the materials shall be avoided and the additional material shall be placed free from pockets of coarse and fine materials. Extra material shall only be spread on the section to be recycled and only immediately prior to the recycling operation.

(e) Cold In situ Recycling:

The existing pavement material shall be broken down to the specified depth and processed in place.

The recycled material, extra material, bituminous stabilising agent, additives and water shall be thoroughly mixed by the recycling mixing process with plant as specified in clause E4.

The bituminous stabilising agent, additives and water shall be measured by mass and quantities calculated in accordance with the formulas given in Section E1003 and shall be introduced continuously in a controlled manner which is proportional to the rate of advance as to ensure the correct quantity of each material is added to the full width of section being recycled.

It is a specific requirement of this contract that the emulsion tanker supplying the emulsion be equipped with an approved measuring device (i.e. Dip stick) so as to enable the site staff to take control dips at intervals specified by the Engineer. The recycling operation will be cancelled/interrupted unless this requirement is met.

The method of introducing the various materials comprising the final mix shall be subject to the Engineer's approval. Care shall be taken to prevent excessive loss of moisture between the time when the materials are mixed and when they are compacted on the road.

Broken down existing bituminous material as defined in Section E2(a) shall have a maximum ‘chunk’ size of 60 mm. ‘Chunks’ not complying with this requirement shall be manually removed from the recycled base.

(f) Spreading:

The recycled mix shall be spread and levelled by motor grader to the required width and to such thickness as will comply with the requirements specified in Clause E10 after final compaction. Segregation of the materials shall be avoided and the layers shall be free of pockets of coarse or fine materials.

(g) Compaction:

The completed compacted layer shall have a minimum in situ dry density of 98% of modified AASHTO density. The maximum dry densities and optimum moisture contents issued by the Engineer are to be used purely as a guide and it shall be the responsibility of the Contractor to determine the maximum dry density and optimum moisture content of the recycled material for purposes of quality control (i.e. compaction control). The Contractor may select any suitable compaction technique to achieve this required compaction, subject to the following conditions:

The initial compaction shall be carried out with plant which achieves a stability suitable for subsequent compaction without causing undue displacement of the material or deformation of the layers. The rolling pattern shall be so designed as to retain the shape of the layers as far as possible.

The types and number of compaction equipment to be used and the amount of rolling to be done shall be such as to ensure that specified densities are obtained without damage being done to lower layers or structures. During compaction the layer shall be maintained to the required shape and cross section, and all holes, ruts and laminations shall be removed.

Compaction equipment shall be adequate for obtaining the specified density within the specified time limits.

The compaction equipment and techniques shall be capable of producing the specified surface finish and density without any interruption.

Not more than one hour (1) shall elapse between the time of starting the mixing process and that of starting to compact the material.

From the time when the stabilising agent, additives, aggregate and water are added together and mixed, not more than three hours (3) shall elapse until the compaction has been finally completed.

During compaction of the stabilised layers, the Contractor shall lightly harrow or scarify the crust before final rolling, if so required by the Engineer, in order to prevent the formation of laminations near the surface of the layers.

(h) Slushing:

Method 1

Immediately after completion of the compaction described in subsection (h), the road surface shall be watered, rolled and slushed by means of the heaviest available pneumatic-tyred roller (normally 28 tonnes) followed by a 10 to 12 tonne steel-wheeled roller (no vibration) to finish the surface and to remove marks left by the pneumatic-tyred roller. Should the material be wetter than fluid optimum care should be taken to prevent excessive deformation of the surface by too much rolling. The final surface should be smooth, tightly knit and free of undulations, corrugations, holes, bumps or loose material.

Method 2

Immediately after completion of the compaction described in subsection (h), an invert bitumen emulsion complying with SABS 1260 diluted 1:1 with water, shall be applied to the road surface using a water truck (0,5 litres/m2 application rate), and shall be rolled and slushed by means of steel-wheeled rollers with a mass of not less than 12 tons each, and/or with pneumatic rollers. The final surface should be smooth, tightly knit and free of undulations, corrugations, holes, bumps or loose material.

(i) Blading:

Blading of cold in-situ recycled granular bases shall be carried out when instructed by the Engineer. Blading shall be done to remove surplus material to such widths and depths as may be instructed by the Engineer and shall be disposed of as prescribed. Blading or skimming off of surplus material shall be defined as being effectively removed by means of road graders.

Blading shall be carried out when the recycled granular base is at the correct moisture content. The Contractor shall determine the moisture content at which the material is to be bladed to facilitate the proper blading of the surface.

The bladed surface shall be finished to level in keeping with the designed profile for the existing road to shed water from the road. On the high and low side of super elevated section the surface shall be bladed to the specified design crossfall for the existing road.

No undercutting or small windrows which will prevent water flowing freely off the road surface or into culvert inlets shall be left. Any drains blocked off shall be opened and spillage into the culvert inlets and outlets timeously removed.

Any surplus material resulting from the blading work shall be removed from the site and disposed of or stockpiled at an approved site as ordered by the Engineer and shall remain the property of the Employer.

(j) Disposal of Surplus Material:

Recovered pavement material remains the property of the Employer.

Surplus materials, including waste or oversize material, bladed or skimmed off the road, shall be stockpiled at designated areas.

Should the Employer decide not to use the surplus material, the Contractor shall then spoil the material at an approved spoil site.

(k) Checking moisture content prior to surfacing:

The mixing and placing of asphalt will not be allowed if:

(i) free water is present on the working surface; or if
(ii) the moisture content of the upper 50 mm of the recycled base exceeds 60% of the optimum moisture content and
(iii) the recycled base has cured for at least three (3) days.

E1.7 WEATHER LIMITATIONS

No in-situ recycling shall be commenced if the threat of rain is present.

E1.8 OPERATIONAL LIMITATIONS

The Contractor shall arrange his in-situ recycling of existing pavement layer operations to minimise the disruption of public traffic. Every effort shall be made to ensure the safety of the travelling public on existing roads through the site of the works at all times. In-situ recycling operations shall be carefully planned and executed in accordance with the following limitations:

(a) Work areas shall be clearly demarcated with traffic signs, delineators and traffic control facilities as specified.

(b) The Work areas shall be planned in such a manner that all recycled pavement layers are compacted as specified in Clause E6(h) for a day's production.

(c) The Contractor is to note that as soon as the construction process as described in clause E6 has been completed, the finished road section shall be opened to traffic. The recycled layer shall be cured for a period of at least three (3) days before the asphalt is placed. No priming shall be done unless the recycled layers have been inspected and accepted by the Engineer.

(d) Within Working areas, the Contractor shall make adequate provision for drainage of milled, excavated and/or asphalt overlay areas where water can pond or be contained against a difference in depth on the roadway. No separate payment will be made for the provision an use of standby pumps and dewatering equipment or cutting of drainage slots and/or channels to effectively drain the roadway surface where instructed by the Engineer in the interests of safety for the travelling public. The Contractor shall make due allowance for this drainage in this tendered rates.

(e) Delineators shall be placed along each longitudinal step exceeding 20 mm between adjacent lanes of the roadway.

(f) The maximum allowable step within a lane open to traffic shall be restricted to 20 mm. If, due to plant breakdown or other unforeseen circumstances, a longitudinal or transverse step higher than 20 mm occurs within a lane, the strip shall be feathered off by means of compacted asphalt over a distance of 500 mm.

E1.9 PROTECTION AND MAINTENANCE

The Contractor is to note that as soon as the construction process as described in clause C1006 has been completed, the finished road section shall be opened to traffic. The Contractor shall protect the completed granular base layers from all damage until the asphalt work is complete. Any damage occurring to the completed base or any defects which may develop due to faulty workmanship, shall be made good by the Contractor at his own expense and to the satisfaction of the Engineer.

Repairs shall be made in a manner approved by the Engineer to ensure an even and uniform surface.

During working and construction of the base, precautionary measures shall be taken to prevent kerbs and channelling and concrete work from being damaged or shifted. Care shall be taken to protect all precast units from chipping and breakage. Concrete kerbing and channelling as well as other structures adjacent to the road shall be protected against staining by bitumen or bituminous stabilised base being placed. Any work stained by bitumen shall be broken down and replaced, unless all such bitumen is completely removedso not to show any stains. Painting over stained work will not be allowed.

Where the cold in-situ recycling process is to be carried out at existing structures care shall be exercised to avoid damage to concrete elements, expansion joints, manholes, catchpits, etc. Damage caused to any element forming part of the permanent works shall be repaired at the Contractor's cost.

Due care shall be exercised when working around existing gullies or kerb inlets so as not to cause blockages. This shall be achieved by either covering them with steel plates during the recycling process or by removing all trapped material immediately after the recycling operation.

E1.10 CONSTRUCTION TOLERANCES AND FINISH REQUIREMENTS

(a) Construction Tolerances:

The applicable construction tolerances are the relevant tolerances indicated in Clause 3405. Where the existing granular base abuts kerbs, channels or New Jersey barriers the new work shall extend to the edge of these facilities.

Unless otherwise specified, the recycled base shall be constructed to the existing levels, cross section profile and crossfall to allow an asphalt surfacing layer of nominal specified thickness to be placed on the completed recycled granular base.

(b) Bituminous stabilising agents:

The average rate of application of bituminous stabilising agent as measured at operating temperature in the recycling plant and distributor shall be within 10% (if specified rate of application < 2,0% net bitumen) or 5% (if specified rate of application ≥ 2,0% net bitumen) of the specified rate of application and these shall constitute the acceptance limits as described in Clause 8300 of the Standard Specification.

(c) Uniformity of mix (chemical stabilisation):

The quantity of cementitious binder or additive in the mixed material as determined during sampling and testing as specified in sub clause 8110(a), shall be within the limits specified in the statistical judgement plan described in clause 8305.

As described in clause 8110(a), test results shall be adjusted to make allowance for the presence in the material to be stabilised, of minerals which affect the test results. The above requirements for uniformity of mix shall be applied only on condition that the variation in these adjustments falls within the limits specified in clause 8110.

E1.11 QUALITY CONTROL

For each construction lot the Contractor shall conduct the following tests, all in accordance with TMH1:

- Relative density – 6 No.
- Unconfined compressive strength – 3No.
- California Bearing Ratio (CBR) – 3 No.
- Indirect Tensile Strength – 3 No.

The Contractor shall give the Engineer at least 24 hours' notice of his intention to recycle so that the actual process can be controlled by the Engineer. Unless otherwise agreed in advance the Contractor shall only recycle when the Engineer or his representative is present.

E1.12 TRIAL SECTIONS

Where ordered by the Engineer, the Contractor shall execute trial cold in-situ recycling on the various materials to be reprocessed. During the trial work, the Contractor will be expected to vary the direction and the forward speed of the machine, and also the reprocessing depth, in order to obtain compliance with the level tolerances and surface texture and for traffic safety requirements. Trial sections shall be carried out at sites indicated by the Engineer.

Trial sections shall be carried out at sites indicated by the Engineer. A trial section shall be at least 100m in length.

No claims for delays while waiting for the test results and no claims for taking the plant off site and bringing it back to site after the trial sections will be considered.

E1.13 MEASUREMENT AND PAYMENT

Item		Unit
E10.01	**Cold insitu recycled granular layer (modified/ stabilised) compacted to 98 % of mod. AASHTO density**:	
(a)	150 mm deep	Square metre (m^2)
(b)	200 mm deep	Square metre (m^2)
(c)	Extra-over C10.01(a) for compaction to 100% of Mod. AASHTO density	Square metre (m^2)
(d)	Extra-over C10.01(b) for compaction to 100% of Mod. AASHTO density	Square metre (m^2)

The unit of measurement shall be the square metre of pavement recycled to the depth specified by the Engineer and based on the final cross sections.

The rate tendered shall include full compensation for the provision of all plant, labour, materials and all other incidentals necessary to produce the finished layer as specified but excluding the provision of the bituminous stabilising agent and stabilising additives which shall be measured and paid for under items E10.02 and E10.03.

The tendered rate shall also include full compensation for the milling of existing pavement layers, blending of the materials, supply and mixing of water, spreading and final blading of the recycled mix, compacting the material to the specified density and protecting and maintaining the work in accordance with the specifications.

The tendered rate shall also include full compensation for the cleaning of the surface and the referencing of lane and control survey markings as specified. Where ordered by the Engineer, the recycling of pavement layers to depths other than specified, payment will be made on a pro rata basis between the tendered rates for nominal depths scheduled.

Item			Unit
E10.02	**Bituminous stabilising agents:**		
	(a)	Cationic 65% stable grade bitumen	litre (l)
	(b)	Anionic 60% stable grade bitumen emulsion	litre (l)

The unit of measurement shall be the litre of bituminous stabilising agent applied as specified or as instructed by the Engineer.

The tendered rate shall include full compensation for providing, diluting and applying the stabilising agent, irrespective of the prescribed rate of application.

Item			Unit
E10.03	**Additive for bituminous stabilisation:**		
	(a)	CEM I42,5 cement	ton (t)
	(b)	Road lime	ton (t)

The unit of measurement shall be the ton of additive applied as specified or instructed by the Engineer.

The tendered rates shall include full compensation for providing and spreading the additive and for the incidentals required for mixing it in. The tendered rates shall apply irrespective of the percentage of additive prescribed between the limits of 0,5% and 2,5 % by mass.

Item		Unit
E10.04	**Blading of surplus material to windrow orwhere required on site**	cubic metre (m^3)

The unit of measurement shall be the cubic metre of surplus material bladed to windrow as specified by the Engineer.

The tendered rate shall include full compensation for all labour, equipment and any other incidentals required for blading of surplus material to windrow with a motor grader.

Item		Unit
E10.05	**Removal from site of surplus material**	cubic metre (m^3)

The unit of measurement shall be the cubic metre of surplus material removed.

The volume shall be determined as prescribed by the engineer and shall be the loose volume in stockpiles or its equivalent measured in hauling vehicles. Accurate load and haul sheets shall be kept on site and submitted to the engineer. The tendered rate shall include full compensation (including any delays or disruptions caused by the removal of surplus material to the recycling process) for loading and transporting the surplus material to a designated spoil or stockpile site.

Item			Unit
E10.06	**Slushing of recycled granular base as specified in sectionE6(i) using the following method:**		
	(a)	Method 1	square metre (m^2)
	(b)	Method 2	square metre (m^2)

The unit of measurement shall be the square metre of recycled granular base slushed in accordance with the requirements of section E6 (i) of the Project Specification.

The tendered rate shall include full compensation for providing all materials, plant, labour and any other incidentals required.

Item	Unit
E10.07 Trial sections were ordered	cubic metre (m^3)

The unit of measurement shall be the cubic metre of recycled pavement layers as ordered.

The tendered rate shall include full compensation for the construction of the trial section of recycled pavement layers complete as specified but excluding the provision of the stabilising additives which shall be measured and paid for under items E10.02 and E10.03.

Item		Unit
E10.08 Ripping of pavement layers as specified in clause E6(b) to a depth of:		
(a)	150 mm	square metre (m^2)
(b)	200 mm	square metre (m^2)

The unit of measurement shall be the square metre of pavement layers ripped, dried-out and re-compacted as specified in clause C6(b).

The tendered rate shall include full compensation for the milling of existing pavement layers, spreading and final blading of the material and compacting the material to the specified density.

Item	Unit
E10.09 Extra over item E10.01 for static rolling	square metre (m^2)

The unit of measurement shall be the square metre of recycled granular layer rolled statically at the instruction of the Engineer.

The tendered rate shall be paid as extra over the rates tendered for the item above, and shall include full compensation for all additional costs to statically roll the recycled granular layer as instructed by the Engineer.

E10.10 Extra-over item E10.01 for adding material from commercial sources	cubic metre (m^3)

The unit of measurement shall be the cubic meter of material added. The volume shall be calculated from the cross-sections after compaction. The tendered rate shall include full compensation for procuring the material, all haul and placing and compacting the material before the recycling commences.

E2000: SPEEDHUMPS

E2.1 SCOPE

This section covers the removal of an existing speed hump and raised pedestrian crossing and the preparation for and construction of a new speed and raised pedestrian crossing during the course of resurfacing / rehabilitation projects. It furthermore includes the marking of the finished speed humps and raised pedestrian crossings.

DRAWINGS

The drawings listed here under shall form part of the Contract documents and are included at the back of this volume.

Drawing number	Description
RST 032	Typical Speed Hump Details
RST 033	Typical Raised Pedestrian Crossing Details

E2.2 ROAD MARKINGS

The Contractor shall use the road markings as shown on the relevant drawings indicated in the list of drawings. Please note that the road markings leading up to the speed hump / raised pedestrian shall be in accordance with the details specified in the South African Road Traffic Signs Manual. The new speed hump and raised pedestrian crossing shall only be marked when the premix has cooled sufficiently. This may result in the speed and / or raised pedestrian crossing remaining unmarked overnight. In this case, flashing red or orange lights shall be affixed to barriers to indicate the work site.

E2.3 MEASUREMENT AND PAYMENT

Item	Unit
E20.01 Removal of existing speed hump and/or raised Pedestrian crossing at the location indicated by the Engineer…	cubic metre (m^3)

The unit of measurement shall be the cubic metre of speed hump(s) and raised pedestrian crossing(s) removed during the course of resurfacing / rehabilitation projects. The quality shall be computed in accordance with the authorized dimensions (i.e. cross-sectional area and length) of removed material.

The tendered rate shall include full compensation for providing plant, labour and all other incidentals necessary for the speedhump(s) / raised pedestrian crossing(s), including loading and transporting the removed material to an approved stockpile site for a free-haul distance of 5,0km.

Item	Unit
E20.02 Provision of new speed hump in accordance withDrawing No. RST 032 at the location indicated by the Engineer	cubic metre (m^3)

Item	Unit
E20.03 Provision of new raised pedestrian crossing inaccordance with Drawing No. RST 033 at the location indicated by the Engineer	cubic metre (m^3)

The unit of measurement shall be the cubic metre of speed humps and raised pedestrian crossings constructed during the course of resurfacing / rehabilitation projects. The quality shall be computed in accordance with the authorized dimensions (i.e. cross-sectional area and length) of placed material.

The tendered rate shall include full compensation for procuring, furnishing, mixing and placing the material and all other work necessary for completing the speed humps and raised pedestrian crossings (painting to be measured separately)

E3000: ULTRA THIN ASPHALT

E3.1 SCOPE

This section covers the specifications and work related to the construction of an Ultra-Thin Asphalt (UTA) surfacing in terms of performance criteria, and includes, inter alia, field measurements, acceptance criteria, remedial work and payment items related to the UTA and extended guarantee.

E3.2 GENERAL

This specification supplements Section 4200: Asphalt Base and Surfacing of the Standard COLTO (1998 Edition) document. In the event that any part of it is at variance with the Standard Specification, these specifications shall apply.

The recommendations given in SABITA Manual 27: "Guidelines for thin layer hot mix asphalt wearing courses on residential streets shall be followed, particularly for:

- Mix design criteria and design procedure
- Construction
- Quality control

The contractor should notify the engineer of his design criteria (SABITA manual 27 or other approved) to be applied for the mix design for acceptance.

The ultra-thin asphalt (UTA) surfacing will be required to provide the following functional performance properties:

- A levelling action and ride-quality improvement
- No chip-loss or loose stone
- A hard-wearing riding stone
- Quick curing, able to be opened to traffic almost immediately
- Sealing action for a low permeability
- Good adhesion to lower layer

E3.3 MATERIALS

Unless contrary to the requirements of a certified proprietary product, the constituents shall comply with the following requirements:

Summary of requirements:

Grading: Continuous graded hot mix asphalt
Aggregate: Maximum Aggregate size of 6.7mm

Suggested grading envelope:

Sieve size	9.5	6.7	4.75	2.36	1.18	0.6	0.3	0.15	0.075
Min. % passing	100	90	75	55	42	30	20	10	4
Max. % passing	100	100	95	80	64	50	35	20	12

Binder:	60/70 or 80/100 pen grade bitumen Allow a nominal binder content of 6% for tender purposes
Tack Coat:	Tack Coat must be applied evenly and timeously to allow the new layer to bond effectively to the underlying surface.
Layer Thickness:	Maximum layer thickness not to exceed 20 mm. Target layer thicknesses relating to a specific asphalt product to be nominated by the Supplier/Contractor.
Application Method:	The product shall be placed by conventional layer and compacted to meet the required functional properties.

(a) Tack Coat:

The tack coat shall be a purpose-made bituminous emulsion e.g. Anionic 60, diluted with 50% water. Allow for a nominal spray rate of 0.5litres/m^2 (0.15 litres of Nett binder) for tender purposes.

(b) Bituminous Binder:

(i) Where a homogeneous modified binder is to be used in the production of the surfacing mix, the binder shall comply with the requirements of TG1 (2007): "The use of Modified Bituminous Binders in Roads Construction", for either a type A-E2, A-P2 or A-H2

(c) Aggregates:

(i) The coarse aggregates shall consist of crushed, singled-sized low-absorptive stone, conforming to the quality requirements in COLTO Specification, Section 4200

E3.4 COMPOSITION OF MIX

The contractor shall submit to the Engineer his design for the surfacing mix before commencement of paving. No paving shall start before the Engineer has approved the mix design. The target binder content, filler content and aggregates grading and type of tack coat, shall be subject to the tolerances given in the Standard COLTO Specifications and in Clause B4208A hereof.

E3.5 PLANT AND EQUIPMENT

The following shall apply in addition to the requirements of Section 4204 COLTO Standard Specifications for Road and Bridge Works (1998 Edition):

(a) Mixing Plant:

The UTA surfacing mix shall be produced by an approved type of asphalt plant suitable for the purpose.

(b) Paving Equipment:

The paver shall have a variable width, heated, screed plate.

E3.6 CONSTRUCTION AND WEATHER LIMITATIONS

Paving works shall only be undertaken when the air temperature is at least 15^0C and rising and the road surface temperature is at least 20^0C and rising. No paving shall be taken during rain or immediately after a rainy spell.

The areas to be covered with Ultra-Thin Asphalt shall be cleared of dust and loose particles by means of a mechanical or hand brooming.

The Engineer shall decide whether any areas require levelling layers or scratch coats to fill in depressions or low areas.

The areas shall be covered with a tack coat of dilute bitumen emulsion sprayed at the agreed rate. The tack coat shall be allowed to dry until the water has evaporated before the UTA is to be placed using suitable paving equipment as specified in B4205A. Application temperatures of the UTA shall be between 120^0C and 140^0C.

As keys are generally not required next to kerbs and channels, a pneumatic roller shall be used to compact the rounding of layers next to kerbs and channels as well as to complete the compaction of the layer.

Transverse keys and “feathering off” of minimum length of 1m shall be constructed where the new mat ties in with existing surfaces.

E3.7 PLACING AND FINISHING

(a) Surface Requirements:

Surface defects and base defects shall be repaired prior to paving (including patching and crack sealing as required and / or as instructed by the Engineer). Immediately before paving, the surface shall be cleaned and swept clear of all loose or deleterious material in preparation for the Tack coat.

(b) Record Requirements:

The contractor shall provide the engineer with daily site records showing details of asphalt deliveries and temperatures, stake values of each load, compacted thickness of individual loads and accumulative average mat thickness, and weather conditions.

The Contractor shall also provide records of all permeability tests as described below. The testing shall be done by an approved laboratory.

(c) Tack Coat Requirements:

(i). the application rate for the tack coat shall be approved by the Engineer for a specific area, taking account of:

- The dryness of the existing surfacing.
- The texture of the existing surface.

E3.8 CONSTRUCTION TOLERANCES AND FINISH REQUIREMENTS

(a) Working Mix:

The permitted deviation of the working mix from the accepted target mix proportions shall be within the limits specified in COLTO, but shall in no instance exceed the values listed in table B4201A/1.

TABLE B4201A/1: MIX GRADING DEVIATION PERMITTED

Aggregate Sieve Size (mm)	Permissible deviation From Target Grading (%)
9,5 mm	±6.0
6,7 mm	±6.0
4,75 mm	±5.0
2,36 mm	±5.0
1,18 mm	±5.0
0,600 mm	±5.0
0,300 mm	±5.0
0,150 mm	±5.0
0,075 mm	±2.5

(b) Tack Coat:

The application of the tack coat shall be at the rates specified, but shall have a tolerance not exceeding ±0,1l/m^2 (net cold bitumen).

(c) Asphalt Binder Content:

The binder content in the working mix shall have a tolerance of ±0.3%.

(d) Thickness

The average compacted thickness of the layer shall not deviate from the specific thickness by more than 1.5mm, unless agreed with the engineer.

The minimum thickness at any point shall be at least 80% of the specified thickness.

Should the profile of the existing surface in an average thickness per lot exceeding the specific thickness plus the 1.5mm tolerance, such areas must be agreed in writing with the Engineer. The quality of ultra Thin.

Asphalt applied in excess of this thickness will then be measured and paid for separately under item B42A.02

(d) Permeability

The amended Marvil permeability test as stated in SABITA manual 27: “Guideline for thin layer hot mix asphalt wearing courses on residential streets” will be applicable.

Enough permeability tests shall be performed on an area to provide a clear trend as to the permeability ofthe mat. This should be at least 6 tests per 2000m^2 or pro-rata for smaller areas (min 4 per lot). The maximum permeability allowed for this test is 3l/hr. The average per lot of 5 the test should be less than 1l/hr. Cost of testing shall be for the Contractor’s account.

E3.9 QUALITY OF MATERIALS AND WORKMANSHIP

The Engineer shall, however, conduct tests as he may deem applicable.

E3.10 MEASUREMENT AND PAYMENT

E30.01 Ultra thin asphalt surfacing

The unit of measurement shall be the area of Ultra Thin Asphalt placed in accordance with the specified requirements

E30.02 Extra over for exceeding the maximum allowed thickness

E30.03 Extra over for levelling layers / Scratch coats ordered by the Engineer

The unit of measurement shall be the ton of Ultra Thin Asphalt placed in accordance with the specified requirements, where it has been agreed with the Engineer that the application of thicker layers or levelling layers is required to enable the required level or finish.

The tendered rate shall include full compensation for procuring and providing all materials, irrespective of its origin, for all mixing, placing, compacting and finishing as specified, work in restricted areas, and also for all machinery (establishment excluded), equipment, labour, supervision and other incidentals for executing the work, complete as specified. No additional payment will be made for construction joints for the purpose of tying in with existing levels.

E3.11 ULTRA THIN FRICTION COURSE

General

The composition of the UTFC asphalt mix shall be as follows

Description	Limits
Max. Stone size (6.7; 9.5 or 13.2mm)	70 – 80%
Sand passing 2.36 mm sieve	18 – 25%
Filler passing 0.075 mm sieve	4 – 6%
Bitumen content by mass (60 / 70 penetration grade bitumen)	4.4 – 4.8%

Layer thickness shall depend on the maximum stone size used (see table below):

Max. stone size (mm)	Layer thickness (mm)
9.5	18
13.2	22

Replace sub-clause (e) with the following:

In restricted areas, or on bridge decks, where the specified rollers cannot be used, compaction shall be carried out with hand operated mechanical compaction equipment or approved smaller rollers. The prescribed density requirements remain applicable throughout over the full layer thickness irrespective of the method of compaction.

CONSTRUCTION TOLERANCES AND FINISH REQUIREMENTS

(d) Binder content:

Amend paragraph as follows:

The binder content shall be within the limits in the applicable statistical judgement scheme in clause 8305.

Add the following new subclause:

(g) Compaction:

The completed asphalt base or surfacing layer shall have a density as measured on recovered core, which shall be within the limits specified in the applicable statistical judgement scheme in clause 8305.

QUALITY OF MATERIALS AND WORKMANSHIP

(b) Coring of asphalt layers:

Add the following:

“Cores may only be drilled when the road temperature is 20^{o}C or below. Each core hole must be filled with hot

asphalt and compacted within 12 hours of having been drilled.
Asphalt must be cored within 2 days of having been paved and the density results delivered to the engineer within 3 days of coring.

The Engineer reserves the right to withhold payments for asphalt work until all test results for the section of work concerned have been received and the work fully approved".

(c) Routine inspection and tests:

Add the following

"Test results and measurements will be assessed in accordance with the provisions of section 8300: Quality control (scheme 2)."

Add the following new subclause:

(b) Ultra Thin Friction Course

The properties of the UTFC surfacing layer shall conform to the grading and quality requirements in Table B4203/2(b):

Grading Aggregate Requirements:	**UTFC Mix**	
	9.5mm Max. Agg. Size	**13.2mm Max. Aggr. Size**
Aggregate Crushing Value	<20%	
Polishing Stone Value	>48%	
Flakiness Index	<18%	
Volumetric Requirements:		
Target Marshall (2 x 50) VIM's (open	15 – 17%	
Graded Asphalt, TRH 20 Method)		
Film Thickness(μm)	9-11.5um	

Aggregate Requirements:		
Sieve Size (mm)	**Percentage passing by mass**	
13.2	100	90 – 100
9,5	90 – 100	30 – 50
6,7	30 – 40	27 – 40
4,75	20 – 27	20 - 27
2,36	18 – 21	17 – 23
0,600	12 - 18	10 - 16
0,075	4.5 – 6.5	4.5 – 6.5
Gap between aggregate passing 4,75 and 2,36 sieve	≤4	≤4
Mix/Layer Performance and Durability Criteria		
Texture Depth (field test)	>16mm	>2.0mm
Cantabro Loss (Dry on Marshall briquettes)	<20%	<25%
Tack modification / Base bitumen	60/70 Pen base bitumen with SBR, soft point ≥57^{0}C	
LCS Interconnected Voids (field test)	>17%	

The nominal rate of application of the emulsion tack coat (65% Nett binder) of polymer binder shall be 0.45λm^2 and the nominal binder content (0.6λm^2 on old dry bituminous surfaces) in the mix for the tender purposes shall be taken as 4.7% (by mass) of 60/70 penetration grade bitumen. Details of the type of polymer modifier, emulsion type, viscosity and other relevant properties are to be submitted to the Engineer for approval.

The active filler to be used for the nominal mix design for tender purposes shall consist of 1% hydrated lime. In addition, 0.2% cellulose fibre (per mass of binder) shall be added to the mix.

The texture depth and LCS interconnected voids shall be assessed on the successful sections and the final approved mix and acceptance shall be granted if at least 80% of the areas tested (minimum 6 tests for each property) conform to the criteria in Table 4203/2(b)

PLANT AND EQUIPMENT

(c) Spreading Equipment:

Add the following:

The Contractor shall use a self-tacking paver with levelling beams (9m minimum) and automatic screed control on both sides for the construction of the UTFC layer. Regular mat test tack application rate testing needs to be done on a daily basis (3 per day minimum) to ensure tack accuracy and consistency.

Also add the following:

(iii) Self-tacking paver

The UTFC shall be laid by an approved paver with the following features:

- Built-in variable width spray bar for the tack application;
- Variable width; heated screed plate;
- Insulated tack coat storage tank and distribution pipe system;
- A visible tack spraying apparatus which is located in a position which can be easily accessed or checked by the Engineer's personnel to evaluate the uniformity of the tack application.
- Integrated electronic controls to maintain the required tack coat application rate, width and thickness.
- The contractor is to provide full details of the tack spray operation and quality control system that will be implemented on site to prevent blockages and ensure tack thickness uniformity."

E3.10 MEASUREMENT AND PAYMENT

E30.05 Ultra Thin Friction Course

(a) 20mm thick,13mm stone size UTFC

(b) 18mm thick, 9mm stoner size UTFC

The unit of measurement shall be the ton of Ultra Thin Friction Course placed in accordance with the specified requirements, where it has been agreed with the Engineer that the application of thicker layers or levelling layers is required to enable the required level or finish**.**

The tendered rate shall include full compensation for procuring and providing all materials, irrespective of its origin, for all mixing, placing, compacting and finishing as specified, work in restricted areas, and also for all machinery (establishment excluded), equipment, labour, supervision and other incidentals for executing the work, complete as specified. No additional payment will be made for construction joints for the purpose of tying in with existing levels.

E4000: LABOUR INTENSIVE ASPHALT

E4.1 Scope:

This specification covers the in-situ mixing and application of the fine or medium continuously graded cold mix marketed as LBS Asphalt, designed as a Labour Intensive Asphalt laid to provide a nominal 25mm final asphalt seal,;.

E4.2 Materials:

(a) Bituminous binder

The specified bituminous binder used in the production of the LBS Asphalt is anionic stable grade bitumen emulsion containing a 60% net bitumen content and shall comply to SABS 309 specification.

(b) Aggregates

The aggregate for the LBS Asphalt shall be from an approved source and comply with COLTO requirement for a Grade 3 stone as specified in sub-clause 4302 (b)

(c) LBS Asphalt mix

The LBS Asphalt shall comprise of the following nominal proportions:

Binder	60% anionic emulsion	9%
Filler	LBS Filler 20%	
Sand	Crusher Dust 50%	
Aggregate	6.7 or 9,5mm road stone	21%

The combined grading of the aggregate mixture shall comply COLTO requirements for a fine or medium continuously graded asphalt as defined in table 4202/7.

E4.3 Plant and Equipment:

The following minimum equipment is required for the in-situ mixing and placement of the LBS Asphalt;

Equipment

1 × vibratory pedestrian asphalt roller eg: Bomag 60/75
1 × 1000l water tank (or open top drums)

Asphalt Placement

1 × measuring wheel e.g. Rotowheel
1 × 50m tape measure
1 × pliers
2 × hammers
1 × Kg bag 4" nails (concrete)
1 × fish Line
30 × 6m x 30mm angle iron (5mm thick)
1 × 4m levelling bar

Asphalt Production

6 × measuring containers (25l buckets) *(Provided by supplier)*
10 × wheel barrows
10 × spades
4 × watering cans (with rose)
3 × brooms
3 × metal rakes

Maintenance

1 × bag of rags
1 × paint scraper

Finishing

1 × hand stamper
1 × bucket
1 × builders brush
1 × trowel

E4.4 Construction:

(a) Weather limitations
The LBS Asphalt shall not be applied during periods of rainfall or when rainfall is expected and when air temperatures are below or expected to fall below 4°C.

(b) Preparation of the area to be sealed
Areas shall be cleaned of all dust, dirt, dung, oil or any other foreign matters that may be deleterious to the asphalt seal. The area to be sealed shall be clearly demarcated.

(c) Application of a prime or tack coat
The engineer shall be responsible for determining if the area to be sealed requires a prime or tack coat.

(d) Preparation and application of the LBS Asphalt
The in-situ mixing and placement of the LBS Asphalt shall be done in accordance with the suppliers specifications.

E4.5 Opening to traffic:

Completed sections of LBS asphalt shall be protected from traffic for a minimum of 12 hours.

The contractor shall not allow any construction equipment which is likely to cause damage over the completed seal.

E4.6 Defects:

Excepting fair wear and tear, any defects to the asphalt surfacing arising from faulty or poor workmanship or non-compliance with the specification, shall be made good by the contractor at his own expense within the defects liability period stated in the contract.

E4.7 Measurement and payment:

E40.01 Manufacture and place Continuous Graded Fine Asphalt, incorporating Labour Based Surfacing (LBS) filler (25mm thick)m²
E40.02 Manufacture and place Continuous Graded Medium Asphalt, incorporating LBS filler (30mm thick)m²
E40.03 Manufacture and place LBS Slurry, incorporating LBS fillerm²
E40.04 Manufacture and place Emulsion Treated Base, incorporating LBS Filler (50mm thick)m²

The unit of measurement shall be the square metre of asphalt surfacing constructed to the thickness specified.

The tendered rate shall include full compensation for the procurement, in-situ mixing, placement and compaction of the materials as specified.

E5000 SUB CONTRACTING TO DEVELOPING CONTRACTORS

The Municipality's objective is to provide for contractor development, dependent of the nature of the works and where practically possible. The main contractor may therefore be required to sub-contract a portion of the worksto a sub-contractor who is listed as a Developing Contractor (CE1 and CE2) in this tender.

E5.1 General:

The contractor may subcontract portions of the work included in the contract. Clause 4.4 of the generalconditions of contract makes provision for subcontracting.

The contractor shall enter into written contractual agreements with the sub-contractor and, as soon as an agreement is reached, furnish the Engineer and Employer with copies of such agreements and the written acceptances thereof.

It is recommended that the SAFCEC-based subcontract document is used for all subcontracted work on construction contracts. Rates payable to the sub-contractors works must be in line with the rates submitted by the Main Contractor. In the interests of all parties, the contractor shall enter into a written subcontract with each subcontractor in accordance with the subcontract document. The subcontract gives effect to all the provisions of the contract in respect of the relationship between the contractor and the subcontractor and the liabilities and responsibilities to be accepted by both parties. Where necessary, the contractor will have to provide surety, insurance and facilities for the subcontractor.

E5.2 Appointment of Developing Contractor:

Prior to the appointment of the subcontractor, the contractor shall submit to the employer and the Engineer details of the scope of the work subcontracted including the relevant items in the bill of quantities, what the subcontract total sum, including all the relevant establishment and general sums and any other allowable sums. The Main Contractor The contractor must also stipulate the percentage the sub-contract amount and submit to Engineer and Employer for approval.

If the subcontractor withdraws, the contractor may have to select a different package of work, or choose and propose to appoint a different subcontractor for the same scope of work, or the contractor will have to present, for the same subcontractor a re-negotiated subcontract sum that will be acceptable to the employer. All additional costs that may arise as a result of such a re-negotiation or re-tendering/re-appointment shall be borne by the contractor. If a suitable subcontractor cannot be identified for the envisaged scope of works the contractor shall complete the work at his tendered rates and the associated part of the works shall form part of the works executed by the contractor.

E5.3 Compliance:

The contractor and his subcontractors who makes use of EPWP labour, shall enter into written contracts with all the individuals classed as targeted labour and during the performance of the contract, furnish the Engineer with copies of all contracts entered into.

E5.4 Substitutions:

In the event that, through no fault of the contractor, a contracted targeted enterprise is found to be:

- Unable to perform, or to perform on time;
- Unable to produce acceptable work;
- Unwilling to perform work required; or
- Not fit to perform the service;

The contractor shall notify the Engineer of the apparent necessity to reduce or terminate such a targeted enterprise's contract, citing the reasons therefore.

In the event that the Engineer approves the contractor's request to be relieved of his obligation to make use of a Developing Contractor, the contractor shall either provide a substitute targeted enterprise to take over the contract.

The contractor may only terminate contracts with contracted targeted enterprises and enter into agreements with substitute Developing Contractor, with the Engineer's approval, which shall not be unreasonably withheld.

The employer may, at his sole discretion and upon the basis of evidence submitted by the contractor in support of fruitless efforts in good faith to secure substitute targeted enterprise participation, grant a waiver in respect of contract participation goal obligations.

E5.5 Monitoring:

The contractor shall assume responsibility for the compilation and maintenance of comprehensive records detailing each targeted enterprise's progress during the construction duration, starting from the award of a subcontract to a targeted enterprise until the successful completion of the subcontract work or termination of the subcontract. Similarly the contractor shall maintain comprehensive records of all targeted labour employed from their date of engagement until the date of service termination.

E5.6 Termination:

The contractor shall, upon completion of each individual targeted enterprise's contract, issue a completion certificate and certify the amount paid to such targeted enterprises. He shall submit the certificates, counter-certified by the relevant targeted enterprise, to the Engineer for record-keeping purposes. The contractor shall furnish reasons to the Engineer and employer whenever it is not possible to obtain such counter certification.

E5.7 MEASUREMENT AND PAYMENT

Item		**Unit**
E50.01 Contractor's obligations in respect of managing a developing sub-contractor		
(a)	Subcontracting - Minor Works with value <R300 000	day
(b)	Subcontracting - Minor Works with value <R1 million	day

Payment of the tendered daily rate shall include full compensation for all costs associated with managing works carried out by a Developing Contractor including the provision of surety, insurance and facilities for the subcontractor.

Part F: Occupational Health and Safety Specifications

This part of the project specifications contains comprehensive additional standardised specifications for health and safety matters not covered by nor carried out in terms of the COLTO Standard Specifications.

The number of each clause and each payment item in this part of the project specification is prefixed with a G to differentiate these clauses and items as additional requirements.

The following additional requirements are covered under this part of the project specifications:

SECTION F1000: HEALTH AND SAFETY REQUIREMENTS

F1000 DEFINITIONS

Definitions as per the Construction Regulations 2014 are applicable to this health and safety specification with the following clarifications:

(a) Client means Employer
(b) Principal contractor contractor
(c) Contractor means sub -contractor
(d) Note-go through the definitions as clarify

F1001 SCOPE

This part of the specification has the objective to assist principal contractors entering into contracts with the Employer that they comply with the Occupational Health and Safety (OH&S) Act, No. 85 of 1993, as well as all applicable Regulations. Compliance with this document does not absolve the principal contractor from complying with minimum legal requirements and the principal contractor remains responsible for the health and safety of their employees. Principal and other contractors should insist that this part of the specification form part of any contract that he may have with other contractors and/or suppliers.

This section covers the development of a health and safety specification that addresses all aspects of occupational health and safety as affected by this contract. It provides the requirements that principal contractors and other contractors shall comply with in order to reduce the risks associated with this contract, which may lead to incidents causing injury and/or ill health. In this matter the spirit and intention of the Construction Regulations, regarding negotiations between the parties, related to the contents and approval of the Health and Safety Plan, must be complied with.

F1002 GENERAL OCCUPATIONAL HEALTH AND SAFETY PROVISIONS

(a) Legal Requirements:

A principal contractor shall, as a minimum, comply with:

(i) The Occupational Health and Safety Act and Regulations (Act 85 of 1993)
(ii) The Compensation for Occupational Injuries and Diseases Act (Act 130 of 1993

(b) Risk Assessment:

Every principal contractor performing construction work shall, before the commencement of any construction work or work associated with the aforesaid construction work and during such work, cause a risk assessment to be performed by a competent person, appointed in writing, and the risk assessment shall form part of the OH&S plan and be implemented and maintained. The principal contractor shall conduct a baseline risk assessment, before work commences.

The risk assessment shall further include, where applicable, the standard working procedures and the applicable method statements. This does not imply that all possible risk assessments must be attended to before work commences, but that all relevant risk assessments receive the necessary attention as the Project progresses.

Based on the risk assessments, the principal contractor shall develop a set of site-specific OH&S rules that shall be applied to regulate the OH&S aspects of the construction. The risk assessments, together with the site-specific OH&S rules shall be submitted to the Employer before construction on site commences.

The risk assessment shall include, as far as is reasonably practicable, at least:

(i) the identification of the risks and hazards to which persons may be exposed
(ii) the analysis and evaluation of the risks and hazards identified, inclusive of a residual risk rating methodology. The method used shall not be prescribed.
(iii) a documented plan of safe work procedures, to mitigate, reduce or control those residual risks that have been identified as unacceptably high, by means of the rating system.
(iv) a monitoring plan and
(v) a review plan, inclusive of dates to be adhered to.

All variations to the scope of work shall similarly be subjected to a risk assessment process.

The principal contractor shall review the risk assessments and standard working procedures regularly as the contract work develops and progresses and each time changes are made to the designs, plans and construction methods and processes. The principal contractor shall provide the Employer, other contractors and all other concerned parties with copies of any changes, alterations or amendments

(c) Structure and Responsibilities:

(i) Overall Supervision and Responsibility for OH&S
It is a requirement that the principal contractor, when he appoints contractors in terms of Construction Regulations, includes in his agreement with such contractors the following:

(1) OH&S Act (85 of 1993), Section 37(2) agreement: “Agreement with Mandatory”
(2) OH&S Act (85 of 1993), Section 16(2) appointee/s as detailed in his/her/their respective appointment forms. (Where applicable)

(ii) Specific Supervision Responsibilities for OH&S
The contractor shall appoint designated competent employees and/or other competent persons as required by the Act and Regulations. It is a requirement that where the Construction Regulations stipulate “competence” in an appointment, the contractor shall provide a form of evidence, proving this competence. This proof of evidence will be negotiated between both parties as per the Construction Regulations.

Where the principal contractor employs more than 20 persons (including the employees of other contractors (subcontractors) he has to appoint one OH&S representatives for every 50 employees or part thereof. This is a minimum (legal) requirement in terms of section 17 of the OH&S Act. The principle contractor may at his own discretion cause more OH&S Representatives to be appointed according to site specific requirements.

In terms of section 18 of the OH&S Act, OH&S representatives shall be designated in writing and the designation shall include the area of responsibility of the person and term of the designation. OH&S representatives must be experienced, permanently employed, trained and able to move freely at their designated area of responsibility.

The principal contractor shall ensure that the designated OH&S representatives conduct continuous monitoring and regular inspections of their respective areas of responsibility, focussing on unsafe acts and unsafe conditions and report thereon to the principal contractor. OH&S representatives shall be included in accident or incident investigations. OH&S representatives shall attend all OH&S committee meetings.

(iii) Appointment of OH&S Committee
The principal contractor shall in terms of sections 19 and 20 of the OH&S Act, establish an OH&S committee, which shall meet once a month or sooner, should circumstances require an extraordinary meeting.

(d) Administrative Controls:

(i) Site specific Health and Safety Plan
In compliance with the Construction Regulations the contractor shall, after performing a risk assessment, prepare a health and safety plan for approval by the employer.

The health and safety plan shall include, but not be limited to, the following:
(1) The safety management structure including the names of all designated persons such as the construction supervisor and any other competent persons;
(2) Safety method statements and procedures to be adopted to ensure compliance with the OHS Act. Aspects to be dealt with shall include:
(3) Public vehicular and pedestrian traffic accommodation measures;
(4) Control of the movement of construction vehicles;
(5) The storage and use of materials;
(6) The use of tools, vehicles and plant;
(7) Temporary support structures;
(8) Dealing with working at height;
(9) The use of batch plants;
(10) Excavation work;
(11) Demolition work;
(12) Security, access control and the exclusion of unauthorised persons.
(13) The provision and use of temporary services;
(14) Compliance with wayleaves, permissions and permits;
(15) Safety equipment, devices and clothing to be employed;
(16) Emergency procedures;
(17) Provision of welfare facilities;
(18) Induction and training;
(19) Provision and maintenance of the health and safety file and other documentation;
(20) Arrangements for monitoring and control to ensure compliance with the safety plan.

(ii) Health and Safety Records
As required by the Construction Regulations, the principal contractor and other contractors shall each keep an OH&S file on site. The OH&S file is a term for the SHE Management System utilised on site, which may include copies of relevant documentation.

The following index is neither exhaustive nor prescriptive and shall only be used as a guide:
- Notification of construction work (Construction Regulation 3) where applicable
- Latest copy of OH&S Act (General Administrative Regulation 4)
- Proof of registration and good standing with COID Insurer (Construction Regulation 4(g)
- OH&S plan agreed with the Client including the underpinning risk assessment/s and method statements (Construction regulation 5(1))
- Copies of OH&S committee and other relevant minutes

- Designs/drawings (Construction Regulation 5(8)
- A list of contractors (subcontractors) including copies of the agreements between the parties and the type of work being done by each contractor (Construction Regulation 9)
- Appointment/designation forms as per paragraphs 2.1.1 and 2.1.2.
- Registers as follows:
- Accident/Incident register (Annexure 1 of the General Administrative Regulations)
- OH&S representatives' inspection register
- Asbestos demolition and stripping register
- Batch plant inspections
- Construction vehicles and mobile plant inspections by controller
- Daily inspection of vehicles, plant and other equipment by the operator/driver/user
- Demolition inspection register
- Designer's inspection of structures record
- Electrical installations, -equipment and -appliances (including portable electrical tools)
- Excavations inspection
- Explosive powered tool inspection, maintenance, issue and returns register (incl. cartridges and nails)
- Fall protection inspection register
- First aid box contents
- Fire equipment inspection and maintenance
- Formwork and support work inspections
- Hazardous chemical substances record
- Ladder inspections
- Lifting equipment register
- Materials hoist inspection register
- Machinery safety inspection register (incl. machine guards, lock-outs etc.)
- Scaffolding inspections
- Stacking and storage inspection
- Inspection of structures
- Inspection of suspended platforms
- Inspection of tunnelling operations
- Inspection of vessels under pressure
- Welding equipment inspections
- Inspection of work conducted on or near water
- Welfare facilities as provided

(iii) OHS Audits and Inspections

The employer will conduct monthly audits to comply with Construction Regulations in order to ensure that the principal contractor has implemented and is maintaining the agreed and approved OH&S plan. The employer reserve the right to conduct other ad hoc audits and inspections as deemed necessary. This will include site safety walks.

The principal contractor may conduct his own regular internal audits to verify compliance with his own OH&S management system, as well as with this specification. The principal contractor shall furthermore ensure that each contractor`s health & safety plan is being implemented by conducting periodic audits at intervals mutually agreed upon between upon by the principal contractor and the contractor, but at least once per month.

OH&S representatives shall conduct weekly inspections of their areas of responsibility and report thereon to their foreman or supervisor whilst other appointees shall conduct inspections and report thereon as specified in their appointments e.g. vehicle, plant and machinery drivers, operators and users must conduct daily inspections before start-up.

All the results of the abovementioned inspections and audits shall be in writing, reviewed at OH&S committee meetings, endorsed by the chairman of the meeting and placed on the OH&S File.

(iv) Accidents and Incident Investigations

The principal contractor, with the assistance of appointed Contractors if required, shall insure that the investigation of all accidents/incidents where employees and non-employees were injured to the extentthat he/she/they had to be referred for medical treatment by a doctor, hospital or clinic, take place. The results of the investigation shall be entered into an accident/incident register.

The affected contractor shall be responsible for the investigation of all minor and non-injury incidents as described in Section 24(1)(b) & (c) of the Act and keeping a record of the results of such investigations including the steps taken to prevent similar accidents in future.

The principal contractor shall provide the Employer with copies of all statutory reports required in terms of the Act within 7 days of the incident occurring.

(v) Notification of Construction Work
The principal contractor shall, where the contract meets the requirements laid down in Construction Regulations, prior to commencement of the works, notify the Department of Labour of the intention to carry out construction work and use the form (Annexure A in the Construction Regulations) for the purpose. A copy shall be kept on the OH&S file and a copy shall be forwarded to the employer for record keeping purposes.

(vi) Training and Competence
The training required by the Act and Regulations shall be included in the principal contractor's OH&S plan. The principal contractor shall be responsible for ensuring that all relevant training is undertaken. Only accredited Training providers shall be used for OH&S. The principal contractor shall ensure that their and other contractors' personnel appointed are competent and that all training required for doing the work safely and without risk to health, has been completed before work commences. The principal contractor shall ensure that follow-up and refresher training is conducted as the contract work progresses and the work situation changes. This does not absolve any contractors from their responsibilities as Employers. Records of all training must be kept on the OH&S file for auditing purposes.

(vii) Consultations, Communication and Liaison
OH&S liaison between the employer, principal contractor, other contractors, designer and other concerned parties will be through the OH&S committee as contemplated. In addition to this, communication may be directly to the client or his appointed agent, verbally or in writing, as and when the need arises.

Consultation with the workforce on OH&S matters will be through their supervisors, OH&S representatives and the OH&S committee. The principal contractor shall be responsible for the dissemination of all relevant OH&S information to the other contractors e.g. design changes agreed with the client and the designer, instructions by the client and/or his/her agent, exchange of information between contractors, the reporting of hazardous/dangerous conditions/situations etc. The principal contractors' most senior manager on site shall be required to attend all OH&S meetings.

F1003 OPERATIONAL CONTROL

(a) Operational Procedures:

Each construction activity shall be assessed by the principal contractor so as to identify operational procedures that will mitigate against the occurrence of an incident during the execution of each activity. This specification requires the principal contractor:

(i) to be conversant with all relevant Regulations
(ii) to comply with their provisions
(ii) to include them in his OH&S plan where relevant.

(b) Emergency Procedures:

In conjunction with the identification of operational procedures, the principal contractor shall similarly identify and formulate emergency procedures in the event an incident does occur. The emergency procedures thus identified shall also be included in the principal contractor's OH&S plan, and communicated as part of induction training. It is the responsibility of the First Aid Worker, together with the Construction Supervisor, to make an assessment regarding the severity of injuries and which actions are appropriate. For example: transfer to a medical facility by ambulance or helicopter.

(c) Personal & Other Protective Equipment (Sections 8/15/23 of the OH&S Act):

The contractor shall identify the hazards in the workplace and deal with them. He must either remove them or, where impracticable, take steps to protect workers and make it possible for them to work safely and without risk to health under the hazardous conditions.

Personal protective equipment (PPE) should, however, be the last resort and there should always first be an attempt to apply engineering and other solutions to mitigating hazardous situations before the issuing of PPE is considered.

Where it is not possible to create an absolutely safe and healthy workplace the contractor shall inform employees regarding this and issue, free of charge, suitable equipment to protect them from any hazards being present and that allows them to work safely and without risk to health in the hazardous environment.

It is a further requirement that the contractor maintain the said equipment, that he instructs and trains the employees in the use of the equipment and ensures that the prescribed equipment is used by the employee/s.

Employees do not have the right to refuse to use/wear the equipment prescribed by the employer and, if it is impossible for an employee to use or wear prescribed protective equipment through health or any other reason, the employee cannot be allowed to continue working under the hazardous condition/s for which the equipment was prescribed but an alternative solution has to be found that may include relocating or discharging the employee.

The principal contractor shall include in his OH&S plan the PPE he intends issuing to his employees for use during construction and the sanctions he intends to apply in cases of non-conformance by his employees. Conformance to the wearing of PPE shall be discussed at the weekly inspection meetings.

(d) Other Regulations:

Wherever in the Construction Regulations or this specification there is reference to other regulations (e.g. Construction Regulation 22: Electrical Installations and Machinery on Construction Sites) the principal contractor shall be conversant with and shall comply with these regulations.

(e) Public Health & Safety (Section 9 of the OH&S Act):

The principal contractor shall, as far as is reasonably practicable, be responsible for ensuring that non-employees affected by the construction work are made aware of the dangers likely to arise from said construction work as well as the precautionary measures to be observed to avoid or minimise those dangers.

This includes:
(i) Non- employees entering the site for whatever reason
(ii) The surrounding community
(iii) Passers-by to the site

F1004 PROJECT SPECIFIC REQUIREMENTS

The following site specific requirements are applicable to this project.

(a) General:

The temporary and permanent works required under this contract are described in the various volumes forming part of this contract. The contractor, in complying with the OHS Act and the Construction Regulations, shall consider all aspects of the works described and take into account the construction methods and materials to be used.

Design information provided for safety planning purposes, such as design loads for structures, foundation conditions etc, is provided on the drawings, in the project specifications or in other volumes forming part of this contract.

Environmental conditions and requirements particular to this contract are indicated in the Project Specification.

(b) Site access, egress, deliveries and vehicular and pedestrian routes:

The requirements regarding the control of access to and egress from the Site and vehicular and pedestrian routes are indicated in the Project and Standard Specifications and in particular in Section 1500.

(c) Existing Conditions:

The contractor shall take into account; inter alia, the following existing conditions when complying with the OHS Act:

(i) Existing utility services;
(ii) Existing ground and foundation conditions;
(iii) Traffic accommodation requirements;
(iv) Surrounding land use;
(v) Anticipated weather conditions.

(d) Wayleaves, permissions and permits:

The contractor shall be responsible for obtaining all the wayleaves, permissions or permits applicable to working near any existing services or other infrastructure on Site and shall abide by the safety conditions imposed by such wayleaves, permissions or permits.

(e) Risk Assessments:

The Contractor must ensure that the risk assessment involves identifying the hazards present in a work activity on site. This is followed by an evaluation of the extent of the risk involved taking into account those precautions already being taken.

The following general principle should be followed when conducting a risk assessment:

(i) All relevant risks and/or hazards should be systematically addressed;
(ii) The risk assessment should address what actually happens in the workplace during the work activity;
(iii) All employees and those who may be affected must be considered, including maintenance staff, security guards, visitors and subcontractors;
(iv) The risk assessment should highlight those groups and individuals who may be required to work alone or who have disabilities;
(v) The risk assessment process should take into account the existing safety measures and controls;
(vi) The level of detail on a risk assessment should be appropriate to the level of risk.

The following is a typical list of Risk Assessments to be performed:

(vii) Clearing and Grubbing of the area/site
(viii) Site establishment including:
(ix) Office/s
(x) Secure/safe storage for materials, plant and equipment
(xi) Ablutions
(xii) Sheltered eating area
(xiii) Maintenance workshop
(xiv) Vehicle access to the site
(xv) Dealing with existing structures
(xvi) Location of existing services
(xvii) Installation and maintenance of temporary construction electrical supply, lighting and equipment
(xviii) Adjacent land uses/surrounding property exposures
(ixx) Boundary and access control/public liability exposures (NB: the employer is also responsible for the OH&S of non-employees affected by his/her work activities.)
Health risks arising from neighbouring as well as own activities and from the environment e.g. threats by dogs, bees, snakes, lightning etc.
Exposure to noise
Exposure to vibration
Protection against dehydration and heat exhaustion
Protection from wet and cold conditions
Dealing with HIV/Aids and other diseases
Use of portable electrical equipment including
Angle grinder
Electrical drilling machine
Circular saw
Excavations including
Ground/soil conditions
Trenching
Shoring
Drainage of trench
Welding including

Arc welding
Gas welding
Flame cutting
Use of LP gas torches and appliances
Loading and offloading of trucks
Aggregate/sand and other materials delivery
Manual and mechanical handling
Lifting and lowering operations
Driving and operation of construction vehicles and mobile plant including
Trenching machine
Excavator
Bomag roller
Plate compactor
Front end loader
Mobile cranes and the ancillary lifting tackle
Parking of vehicles and mobile plant
Towing of vehicles and mobile plant
Use and storage of flammable liquids and other hazardous substances e.g. petrol, diesel, cement, asphalt, bituminous materials and the like.
Layering and bedding
Installation of pipes in trenches
Pressure testing of pipelines
Backfilling of trenches
Protection against flooding
Gabion work
Use of explosives
Protection from overhead power lines
As discovered by the principal contractor's hazard identification exercise
As discovered from any inspections and audits conducted by the client or by the principal contractor or any other contractor on site
As discovered from any accident/incident investigation.

(f) Traffic Accommodation:

(i) General
A traffic management plan is to be supplied by the contractor and agreed to by the Engineer.

(ii) Traffic Safety Officer
The Employer requires that a Traffic Safety Officer be appointed. The appointment shall be in writing and the responsibilities clearly stated together with the period for which the appointment is made. This information shall be communicated and agreed with the appointees. Notice of appointments shall be submitted to the Employer. All changes shall also be communicated to the Employer.

(iii) Public
The protection of members of public as road users, road traffic and pedestrians must be prioritised.

(iv) Construction Materials
The following commonly used construction materials and substances potentially pose health and safety hazards:
(1) All materials contained in pressurized containers;
(2) Bitumen products;
(3) Cement;
(4) Epoxies;
(5) Lime and other stabilizing agents;
(6) Paints;
(7) Tar products;
(8) Timber preservatives.
The materials to be used to construct the works are described in the following:
(9) The Scope of Work;
(10) The Project Specifications;
(11) The Standard Specifications;
(12) The Drawings;
(13) The Bills of Quantities;
The contractor shall take appropriate measures to manage the risks associated with the use of all the materials required to complete the works, ie not only those listed above, and shall, inter alia, implement all the precautionary measures provided by manufacturers and suppliers for the storage, use and application of materials used.

F1005 FURTHER REQUIREMENTS

1.0 Duties of Principal Contractor / Contractors in Terms of the Construction Regulations 2014

A principal contractor must-

- provide and demonstrate to the client a suitable, sufficiently documented and coherent site specific health and safety plan, based on the client's documented health and safety specifications, which plan must be applied from the date of commencement of and for the duration of the construction work and which must bereviewed and updated by the principal contractor as work progresses;

- open and keep on site a health and safety file, which must include all documentation required in terms ofthe Act and these Regulations, which must be made available on request to an inspector, the client, the client's agent or a contractor; and

- on appointing any other contractor, in order to ensure compliance with the provisions of the Act –
    - provide contractors who are tendering to perform construction work for the principal contractor, withthe relevant sections of the health and safety specifications pertaining to the construction work whichhas to be performed;

    - ensure that potential contractors submitting tenders have made sufficient provision for health and safety measures during the construction process;

    - ensure that no contractor is appointed to perform construction work unless the principal contractor is reasonably satisfied that the contractor that he or she intends to appoint, has the necessary competencies and resources to perform the construction work safely;

    - ensure prior to work commencing on the site that every contractor is registered and in good standingwith the compensation fund or with a licensed compensation insurer as contemplated in the Compensation for Occupational Injuries and Diseases Act, 1993;

    - appoint each contractor in writing for the part of the project on the construction site

    - take reasonable steps to ensure that each contractor's health and safety plan is implemented and maintained on the construction site;

    - ensure that the periodic site audits and document verification are conducted at intervals mutually agreed upon between the principal contractor and any contractor, but at least once every 30 days;

    - stop any contractor from executing construction work which is not in accordance with the client's health and safety specifications and the principal contractor's health and safety plan for the site orwhich poses a threat to the health and safety of persons;

- where changes are brought about to the design and construction, make available sufficient health andsafety information and appropriate resources to the contractor to execute the work safely; and

- discuss and negotiate with the contractor the contents of their health and safety plan and finally approve that plan for implementation

- ensure that a copy of both the principal contractor and contractor’s health and safety plan is available on request to an employee, an inspector, a contractor, the client or the client's agent;

- hand over a consolidated health and safety file to the client upon completion of the construction work, to include arecord of all drawings, designs, materials used and other similar information concerning the completed structure;

- in addition to the documentation required in the health and safety file include and make available a comprehensive and updated list of all the contractors on site accountable to the principal contractor, theagreements between the parties and the type of work being done; and

- ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner inthe form of Annexure 3.

A contractor must prior to performing any construction work-

- provide and demonstrate to the principal contractor a suitable and sufficiently documented health and safety plan, based on the relevant sections of the client's health and safety specification and provided by the principal contractor, which plan must be applied from the date of commencement of and for the duration of the construction work and which must be reviewed and updated by the contractor as work progresses;

- open and keep on site a health and safety file, which must include all documentation required in terms of the Act and these Regulations, and which must be made available on request to an inspector, the client, theclient's agent or the principal contractor;

- before appointing another contractor to perform construction work be reasonably satisfied that the contractor that he or she intends to appoint has the necessary competencies and resources to perform the construction work safely;

- co-operate with the principal contractor as far as is necessary to enable each of them to comply with the provisions of the Act; and

- as far as is reasonably practicable, promptly provide the principal contractor with any information which might affect the health and safety of any person at work carrying out construction work on the site, any person who might be affected by the work of such a person at work, or which might justify a review of the health and safety plan.

Where a contractor appoints another contractor to perform construction work, the duties that apply to the principal contractor will apply to the contractor as if he or she were the principal contractor.

A principal contractor must take reasonable steps to ensure co-operation between all contractors appointed by the principal contractor to enable each of those contractors to comply with these Regulations.

No contractor may allow or permit any employee or person to enter any site, unless that employee or person hasundergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry.

A contractor must ensure that all visitors to a construction site undergo health and safety induction pertaining to the hazards prevalent on the site and must ensure that such visitors have the necessary personal protective equipment.

A contractor must at all times keep on his or her construction site records of the health and safety induction training and such records must be made available on request to an inspector, the client, the client's agent or the principal contractor;.

A contractor must ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3.

1.1 Management and supervision of construction work

A principal contractor must, in writing, appoint one full-time competent person as the construction manager with the duty of managing all the construction work on a single site, including the duty of ensuring occupational health and safety compliance, and in the absence of the construction manager an alternate must be appointed by the principal contractor.

A principal contractor must upon having considered the size of the project, in writing appoint one or more assistant construction managers for different sections thereof: Provided that the designation of any such person does not relieve the construction manager of any personal accountability for failing in his or her management duties in terms of this regulation.

Where the construction manager has not appointed assistant construction managers, or, in the opinion of an inspector, a sufficient number of such assistant construction managers have not been appointed, that inspector must direct the construction manager in writing to appoint the number of assistant construction managers indicated by the inspector, and those assistant construction managers must be regarded as having been appointed.

No construction manager appointed under this sub regulation may manage any construction work on or in any construction site other than the site in respect of which he or she has been appointed.

A contractor must, after consultation with the client and having considered the size of the project, the degree of danger likely to be encountered or the accumulation of hazards or risks on the site, appoint a full-time or part-time construction health and safety officer in writing to assist in the control of all health and safety related aspects on the site: Provided that, where the question arises as to whether a construction health and safety officer is necessary, the decision of an inspector is decisive.

No contractor may appoint a construction health and safety officer to assist in the control of health and safety related aspects on the site unless he or she is reasonably satisfied that the construction health and safety officer that he or she intends to appoint is registered with a statutory body approved by the Chief Inspector and has necessary competencies and resources to assist the contractor

A construction manager must in writing appoint construction supervisors responsible for construction activities and ensuring occupational health and safety compliance on the construction site.

A contractor must, upon having considered the size of the project, in writing appoint one or more competent employees for different sections thereof to assist the construction supervisor, and every such employee has, to the extent clearly defined by the contractor in the letter of appointment, the same duties as the construction supervisor: Provided that the designation of such employee does not relieve the construction supervisor of any personal accountability for failing in his or her supervisory duties. Where the contractor has not appointed s u c h an employee, or, in the opinion of an inspector, a sufficient number of such employees have not been appointed, that inspector must instruct the employer to appoint the number of employees indicated by the inspector.

No construction supervisor appointed may supervise any construction work on or in any construction site other than the site in respect of which he or she has been appointed: Provided that if a sufficient number of competent employees have been appropriately designated on all the relevant construction sites, the appointed construction supervisor may supervise more than one site.

1.2 Notification of Intention to Commence Construction Work

The Contractor shall notify the Provincial Director of the Department of Labour of the intention to commence construction work at least 7 days prior to the works commencing if the intended construction work will:

- Include excavation work;
- Include work at height where there is a risk of falling;
- Include the demolition of a structure, or
- Include the use of explosives to perform construction work.

If the construction work involves construction of a single storey dwelling for a client, and such client will be residing in such dwelling upon completion, the contractor must also notify the Provincial Director of the Department of Labour at least 7 days before the works commence.

This must be done on a form similar to an Annexure 2. A copy of the notification letter to the Provincial Director shall be forwarded to the Client for record purposes.

1.3 Construction Work Permit

It must be noted that from August 2015 all projects that meet the following criteria will require a construction work permit to be applied for at least 30 days prior to the work being carried out:

- Exceeds 180 days.
- Will involve more than 1800 person days of construction work.
- Works contract is of a value equal to or exceeding thirteen million rand, or Construction Industry Grading Board (CIDB) grading level 6.

It is the client's responsibility to apply for this permit from the Provincial Director and construction work may not commence until the permit has been issued by the Provincial Director.

A copy of this permit will be required to be kept in the principal contractors safety file, and the site specific number issued by the Provincial Director must be displayed at the site entrance.

1.4 Assignment of Contractor's Responsible Persons to Manage Health & Safety on Site

The Contractor shall submit management and supervisory appointments as well as any relevant appointments in writing (as stipulated by the Construction Regulations 2014 and the Occupational Safety and Health Act 1993), prior to commencement of work (**Annexure B).**

1.5 Competency for Contractor's Responsible Persons

The Contractor's responsible persons shall be competent in health and safety and be familiar with the Occupational Health and Safety Act 1993, and applicable regulations. Valid proof of pertinent health and safety courses attended by such persons will be required to be presented to the Client.

1.6 Compensation of Occupational Injuries and Diseases Act 130 of 1993 (COIDA)

The Contractor shall submit to the Client a valid letter of good standing with the Compensation Insurer as part of their tender bid.

1.7 Occupational Health and Safety Policy

The Contractor shall submit a Health and Safety Policy with the Tender, signed by the Chief Executive Officer. The Policy must outline objectives and how they will be achieved and implemented by the Company / Contractor.

1.8 Health and Safety Organogram

The Contractor shall submit an organogram with the Tender, outlining the Health and Safety Site Team that will be assigned to the project, if successful with the tender. In cases where appointments have not been made, the organogram shall reflect the position. The organogram shall be updated, when there is a change in the site team.

1.9 Risk Assessments

Baseline Risk Assessment

The Client shall cause a baseline risk assessment to be conducted by a competent person before the design process and tender process commence, and the assessed risks shall form part of the health and safety specifications.

This baseline risk assessment will need to be comprehensive and may well lead to further, separate, more in depth risk assessment studies. The baseline risk assessment should be periodically reviewed.

The Contractor must, before commencement of any construction work, and during construction work, have risk assessments performed by a competent person appointed in writing, which risk assessments form part of the health and safety plan to be applied on the site and must include:

- The identification of the risks and hazards to which persons may be exposed to;
- An analysis and evaluation of the risks and hazards identified; based on a documented method
- A documented plan and applicable safe work procedures to mitigate, reduce or control the risks andhazards that have been identified;
- A monitoring plan; and
- A review plan

The Contractor must ensure that, as far as is reasonably practicable, ergonomic related hazards are analysed,evaluated and addressed in a risk assessment.

The Contractor must ensure that all employees under his control are informed, instructed and trained by a competent person regarding any hazard and the related work procedures and/or control measures **before any work commences** and thereafter **at the times determined in the risk assessment monitoring and review plan of the relevant site.**

The Principal Contractor must ensure that all contractors are informed regarding any hazard that is stipulated in the risk assessment **before any work commences** and thereafter **at the times determined in the risk assessment monitoring and review plan of the relevant site.**

The Contractor must consult with the health and safety committee or with a representative trade union or representative group of employees if no health and safety committee exists, on the monitoring and review of the risk assessments for the site.

The Contractor must ensure that copies of risk assessment for this site are available on sit for inspection purposes by interested parties (inspector, the client, client's agent, any contractor, any employee, a representative trade union, a health and safety representative or safety committee member.

A Contractor must review the relevant risk assessment where changes are effected to the design and/or construction that result in a change to the risk profile, or when an incident has occurred.

Preventative measures must first address the elimination of the hazard or risk. Should PPE be required to reduce risk, the equipment or clothing must be used and be SABS approved.

In general the Contractor must ensure that the Risk Assessment involves identifying the hazards present in a work activity on site. This is followed by an evaluation of the extent of the risk involved taking into account those precautions already being taken.

The following general principle should be followed when conducting a risk assessment:

- All relevant risks and/or hazards should be systematically addressed;
- The risk assessment should address what actually happens in the workplace during the workactivity;
- All employees and those who may be affected must be considered, including maintenance staff,security guards, visitors and subcontractors;
- The risk assessment should highlight those groups and individuals who may be required to workalone or who have disabilities;

- The risk assessment process should take into account the existing safety measures andcontrols.
- The level of detail on a risk assessment should be appropriate to the level of risk.

1.10 Health and Safety Representative(s)

The Contractor shall ensure that a Health and Safety Representative(s) are /is elected and trained to carry out his / her functions. The appointment must be in writing. The Health and Safety Representative shall carry out regularinspection, keep records and report to the supervisor to take appropriate action. He / she shall attend Health and Safety Committee Meetings. The Health and Safety Representative shall be part of the team that will investigate incidents, accidents & non-conformances.

1.11 Health and Safety Committee

Where two or more health and safety representatives have been appointed on site, the Contractor shall ensure that monthly health and safety meetings are held with such representatives and minutes are kept on record. Meetings must be organized and chaired by the Contractor's Health and Safety Committee Chairperson. Minutes of these meetings must be publicised for reference by the employees of the contractor.

1.12 Medical Certificate of Fitness

It must be noted that the contractor must ensure that their employees on site have a valid medical certificate of fitness, specific to the construction work being performed, issued by an occupational health practitioner in the form of an Annexure 3 template (refer to the Construction Regulations 2014 on the Department of Labour website for a sample of this form).

1.13 Health and Safety Training

The Contractor shall quarterly conduct a training needs analysis to ascertain what health and safety training is required. A plan of action should be devised and forwarded to the Client for records. Once the identified people have attended the training, the Contractor must provide the Client with copies of certificates obtained.

1.13.1 Induction

No Contractor may allow or permit any employee or person to enter site unless they undergone health and safety induction training pertaining to the hazards prevalent on site at the time of entry. This includes visitors to site. The Contractor must ensure that visitors to site have the necessary protective equipment (PPE) and shall keep a copy of theattendance register of all his / her employees who attended the induction.

1.13.2 Awareness

The Contractor shall conduct, on site, periodic toolbox talks, preferably weekly or before any hazardous work takes place. The talks shall cover the relevant activity and an attendance register must be kept and signed by all attendees. A record of who attended and the content of the topic will be kept on the site health a safety file as evidence of training.

1.14 Competency

After the Contractor has identified the training to be conducted as part of the competency requirement, and based on Risk Assessment he shall send the relevant persons on appropriate courses and keep certificates of training for reference. Familiarity with the health and safety Act and regulations is an integral part of the definition of competence.

1.15 General Record Keeping

The Contractor shall keep and maintain Health and Safety records to demonstrate compliance with the Health and Safety Specification and the Occupational Health and Safety Act. The contractor shall ensure that all records of incidents, spot fines, training etc. are kept on site. All documents shall be available for inspection by the Client, or the Department of Labour's Inspectors.

1.16 General Inspection, Monitoring and Reporting

The Contractor shall carry out inspections as required by **Annexure C** in this health and safety specification, as well as by health and safety legislation.

1.17 Emergency Procedures

The Contractor shall submit a detailed Emergency Procedure for approval by the Client prior to commencement on site. The procedure shall detail the response plan including the following key personnel:

- List of key personnel,
- Details of emergency services,
- Actions or steps to be taken in the event of the emergency; and
- Information on hazardous materials / situations, including each material's hazardous potential impact or risk on the environment or human and measures to be taken in the event of an accident.

Emergency procedure(s) shall include, but shall not be limited to, fire, spills, accidents to employees, use of hazardous substances, dangers as a result of riot / service deliver protests / intimidation, etc. The Contractor shall advise the Client in writing of any on-site emergencies, together with a record of action taken, within 24 hours of the emergency occurring. A contact list of all service providers (Fire Department, Ambulance, Police, Medical and Hospital, etc) must be maintained and available to site personnel.

1.18 First Aid Box and First Aid Equipment

The Contractor shall provide first aid box/es and appoint, in writing, First Aider(s) for this project in line with the results of the Contractor's risk assessment for the project, this health and safety specification as well as the provisions of the General Safety Regulations. The appointed First Aider(s) are to be sent for accredited first aid training before starting on site. Valid certificates are to be kept on site.

First Aid box/s must be adequately stocked at all time, accessible and be controlled by a qualified First Aider. If required by the Client, the Contractor shall have a stretcher on site to be used in case of a serious incident.

1.19 Accident / Incident Reporting and Investigation

The Contractor shall in addition to the prescribed requirements of the Occupational Health and Safety Act and General Safety Regulations investigate, record and report all Section 24 reportable incidents to the Client within 24 hours of the incident occurring. Incident investigations shall be conducted by the Contractor's appointed Accident Investigator – this Investigator must be a competent person or persons who have sufficient knowledge to carry out an investigation.

In the event of a fatality or a permanent disabling injury the Contractor must submit proof of reporting of incident to Department of Labour as well as proof of preventative measures to the Client. The Client reserves the right to conduct investigations into any incidents that they deem fit and the Contractor is required to provide full co-operation in this regard.

1.20 Hazards and Potential Situations

The Contractor shall immediately notify other Contractors of any hazardous or potentially hazardous situations, which may arise during performance of the activities.

1.21 Occupational Health and Safety Signage

The Contractor shall ascertain and provide adequate on site health and safety signage. This signage shall include, but shall not be limited to, Hard Hat / Helmet Area; Safety Shoes to be worn on site; Dust Masks to be worn in areas where there might be exposure to excessive dust; Ear Plugs / Muffs to be worn where there might be noise exposure over 85 db; Gloves; Safety Goggles; Safety Harness, workers in excavation, traffic management, etc. The Contractor shall be responsible to maintain the quality and replacement of signage.

1.22 Management of Contractors by Principal Contractor

The Principal Contractor shall ensure that all contractors under his control are complying with the respective health and safety plans, as well as health and safety legislation.

1.23 Stacking of Materials

In addition to the provisions for the stacking of articles in the General Safety Regulations, 2003, the contractor must ensure that –

- a competent person is appointed in writing with the duty of supervising all stacking and storage on a construction site;
- adequate storage areas are provided;
- there are demarcated storage areas; and
- storage areas are kept neat and under control.

1.24 Housekeeping and General Safeguarding on Construction Sites

A contractor must, in addition to compliance with the Environmental Regulations for Workplaces, 1987, promulgated by Government Notice No. R. 2281 of 16 October 1987, ensure that suitable housekeeping is continuously implemented on each construction site, including-

- the proper storage of materials and equipment;
- the removal of scrap, waste and debris at appropriate intervals;
- ensuring that materials required for use, are not placed on the site so as to obstruct means of access to and egress from workplaces and passageways;
- ensuring that materials which are no longer required for use, do not accumulate on and are removed from the site at appropriate intervals;
- ensuring that waste and debris are not disposed of from a high place with a chute, unless the chute complies with the requirements set out in regulation 14(6);
- ensuring that construction sites in built-up areas adjacent to a public way are suitably and sufficientlyfenced off and provided with controlled access points to prevent the entry of unauthorized persons; and
- ensuring that a catch platform or net is erected above an entrance or passageway or above a place where persons work or pass under, or fencing off the danger area if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe in the case of danger or possibility of persons being struck by falling objects.

1.25 Construction vehicles and mobile plant

A contractor must ensure that all construction vehicles and mobile plant-

- are of an acceptable design and construction;
- are maintained in a good working order;
- are used in accordance with their design and the intention for which they were designed, having due regard to safety and health;
- are operated by a person who-
  - (i) has received appropriate training, is certified competent and in possession of proof of competency and is authorised in writing to operate those construction vehicles and mobile plant;
  - (ii) has a medical certificate of fitness to operate those construction vehicles and mobile plant, issued by an occupational health practitioner in the form of Annexure 3.;
- have safe and suitable means of access and egress;
- are properly organized and controlled in any work situation by providing adequate signalling or other control arrangements to guard against the dangers relating to the movement of vehicles and plant, in order to ensure their continued safe operation;
- are prevented from falling into excavations, water or any other area lower than the working surface by installing adequate edge protection, which may include guardrails and crash barriers;
- are fitted with structures designed to protect the operator from falling material or from being crushed should the vehicle or mobile plant overturn;
- are equipped with an acoustic warning device which can be activated by the operator;
- are equipped with an automatic acoustic reversing alarm; and
- are inspected by the authorised operator or driver on a daily basis using a relevant checklist prior to use and that the findings of such inspection are recorded in a register kept in the construction vehicle or mobile plant.

A contractor must ensure that-

- no person rides or is required or permitted to ride on a construction vehicle or mobile plant otherwise than in a safe place provided thereon for that purpose;
- every construction site is organized in such a way that, as far as is reasonably practicable, pedestrians and vehicles can move safely and without risks to health;

- the traffic routes are suitable for the persons, construction vehicles or mobile plant using them, are sufficient in number, in suitable positions and of sufficient size;
- every traffic route is, where necessary, indicated by suitable signs;
- all construction vehicles and mobile plant left unattended at night, adjacent to a public road in normal use or adjacent to construction areas where work is in progress, have appropriate lightsor reflectors, or barricades equipped with appropriate lights or reflectors, in order to identify the location of the vehicles or plant;
- all construction vehicles or mobile plant when not in use, have buckets, booms or similar appendages, fully lowered or blocked, controls in a neutral position, motors stopped, wheelschocked, brakes set and ignition secured;
- whenever visibility conditions warrant additional lighting, all mobile plant are equipped with at least two headlights and two taillights when in operation;
- tools, material and equipment are secured and separated by means of a physical barrier in order to prevent movement when transported in the same compartment with employees;
- vehicles used to transport employees have seats firmly secured and adequate for the number of employees to be carried; and
- all construction vehicles or mobile plant travelling, working or operating on public roads comply with the requirements of the National Road Traffic Act, 1996.

1.26 Electrical installations and machinery on construction sites

A contractor must, in addition to compliance with the Electrical Installation Regulations, 2009, and the Electrical Machinery Regulations, 1988, promulgated by Government Notice No.1593 of 12 August 1988, ensure that-

- before construction commences and during the progress thereof, adequate steps are taken to ascertain the presence of and guard against danger to workers from any electrical cable or apparatus which is under, over or on the site;
- all parts of electrical installations and machinery are of adequate strength to withstand the working conditions on construction sites;
- the control of all temporary electrical installations on the construction site is designated to a competent person who has been appointed in writing for that purpose;
- all temporary electrical installations used by the contractor are inspected at least once a week by a competent person and the inspection findings are recorded in a register kept on the construction site; and
- all electrical machinery is inspected by the authorized operator or user on a daily basis usinga relevant checklist prior to use and the inspection findings are recorded in a register kept on the construction site.

1.27 Use and temporary storage of flammable liquids on construction sites

A contactor must, in addition to compliance with the provisions for the use and storage of flammable liquids in the General Safety Regulations, 2003, ensure that –

- where flammable liquids are being used, applied or stored at the workplace concerned, it is done in a manner that does not cause a fire or explosion hazard, and that the workplace is effectively ventilated;
- no person smokes in any place in which flammable liquid is used or stored, and the contractor must affix a suitable and conspicuous notice at all entrances to any such areas prohibiting such smoking;
- an adequate amount of efficient fire-fighting equipment is installed in suitable locations around the flammable liquids store with the recognized symbolic signs;
- only the quantity of flammable liquid needed for work on one day is taken out of the store for use;
- all containers holding flammable liquids are kept tightly closed when not in actual use and, after their contents have been used up, are removed from the construction site and safely disposed of;
- where flammable liquids are decanted, the metal containers are bonded and earthed; and
- no flammable material, including cotton waste, paper, cleaning rags or similar material is stored together with flammable liquids

1.28 Water environments

A contractor must ensure that where construction work is done over or in close proximity to water, provision is made for-

- preventing persons from falling into water; and
- the rescuing of persons in danger of drowning.

A contractor must ensure that where a person is exposed to the risk of drowning by falling into the water, the person is provided with and wears a lifejacket.

1.29 Fire precautions on Construction Sites

A contractor must, in addition to compliance with the Environmental Regulations for Workplaces, 1987, ensure that –

(a) all appropriate measures are taken to avoid the risk of fire;

(b) sufficient and suitable storage is provided for flammable liquids, solids and gases;

(c) smoking is prohibited and notices in this regard are prominently displayed in all places containing readily combustible or flammable materials;

(d) in confined spaces and other places in which flammable gases, vapours or dust can cause danger-
  (i) only suitably protected electrical installations and equipment, including portable lights, are used;
  (ii) there are no flames or similar means of ignition;
  (iii) there are conspicuous notices prohibiting smoking;
  (iv) oily rags, waste and other substances liable to ignite are without delay removed to a safe place; and
  (v) adequate ventilation is provided;

(e) combustible materials do not accumulate on the construction site;

(f) welding, flame cutting and other hot work are done only after appropriate precautions have been taken to reduce the risk of fire;

(g) suitable and sufficient fire-extinguishing equipment is placed at strategic locations or as may be recommended by the Fire Chief or local authority concerned, and that such equipment is maintained in a good working order;

(h) the fire equipment contemplated in paragraph *(g)* is inspected by a competent person, who has been appointed in writing for that purpose, in the manner indicated by the manufacturer thereof;

(i) a sufficient number of workers are trained in the use of fire- extinguishing equipment;

(j) where appropriate, suitable visual signs are provided to clearly indicate the escape routes in the case of a fire;

(k) the means of escape is kept clear at all times;

(l) there is an effective evacuation plan providing for all-
  (i) persons to be evacuated speedily without panic;
  (ii) persons to be accounted for; and
  (iii) plant and processes to be shut down; and

(m) a siren is installed and sounded in the event of a fire.

1.30 Construction Employees' Facilities

A contractor must, in addition to the construction site provisions in the Facilities Regulations, 2004, promulgated by Government Notice No. R. 924 of 3 August 2004, provide at / or within reasonable access of every construction site, the following clean, hygienic and maintained facilities:

- Shower facilities after consultation with the employees or employees representatives, or at least one shower facility for every 15 persons;
- at least one sanitary facility for each sex and for every 30 workers;
- changing facilities for each sex; and sheltered eating area.

A contractor must provide reasonable and suitable living accommodation for the workers at construction sites who are far removed from their homes and where adequate transportation between the site and their homes, or other suitable living accommodation, is not available.

1.31 Fall protection

The 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 above 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 positionand the records thereof;
- a programme 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 arescue 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 8(1) is in possession of the most recently updated version of the fall protection plan.

A contractor must ensure that 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.

Also that no person is required to work in a fall risk position, unless such work is performed safely as contemplated in aboveand 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 of plant and the means of attachment thereto are suitable and of sufficient strength and stability for the purpose of safely supporting the equipment and person who could fall, and fall arrest equipment is used only where it is not reasonably practicable to use fall prevention equipment.

1.32 Temporary works

A contractor must appoint a temporary works designer in writing to design, inspect and approve the erected temporary works on site before use.

A contractor must ensure that all temporary works operations are carried out under the supervision of a competent person who has been appointed in writing for that purpose.

A contractor must ensure that-

- all temporary works structures are adequately erected, supported, braced and maintained by a competentperson so that they are capable of supporting all anticipated vertical and lateral loads that may be applied to them, and that no loads are imposed onto the structure that the structure is not designed to withstand;
- all temporary works structures are done with close reference to the structural design drawings, andwhere any uncertainty exists the structural designer should be consulted;
- detailed activity specific drawings pertaining to the design of temporary works structures are kept on the site and are available on request to an inspector, other contractors, the client, the client's agent or any employee;
- all persons required to erect, move or dismantle temporary works structures are provided with adequate training and instruction to perform those operations safely;
- all equipment used in temporary works structure are carefully examined and checked for suitability by a competent person, before being used;
- all temporary works structures are inspected by a competent person immediately before, during and after the placement of concrete, after inclement weather or any other imposed load and at least on a daily basis until the temporary works structure has been removed and the results have been recorded in a register and made available on site;
- no person may cast concrete, until authorization in writing has been given by the competent person contemplated above*;*
- if, after erection, any temporary works structure is found to be damaged or weakened to such a degreethat its integrity is affected, it is safely removed or reinforced immediately;
- adequate precautionary measures aretaken inorder to- secure any deck panels against displacement; and prevent any person from slipping on temporary works due to the application of release agents;
- as far as is reasonably practicable, the health of any person is not affected through the use of solvents or oils or any other similar substances;
- upon casting concrete, the temporary works structure is left in place until the concrete has acquired sufficient strength to safely support its own weight and any imposed load, and is not removed until authorization in writing has been given by the competent person
- the foundation conditions are suitable to withstand the loads caused by the temporary works structure and any imposed load in accordance with the temporary works design.
- provision is made for safe access by means of secured ladders or staircases for all work to be carried out above the foundation bearing level;
- a temporary works drawing or any other relevant document includes construction sequences and methods

statements;
- the temporary works designer has been issued with the latest revision of any relevant structural design drawing;

- a temporary works design and drawing is used only for its intended purpose and for a specific portion of a construction site; and
- the temporary works drawings are approved by the temporary works designer before the erection of any temporary works.

No contractor may use a temporary works design and drawing for any work other than its intended purpose.

1.33 Excavation

A contractor must-
- ensure that all excavation work is carried out under the supervision of a competent person who has been appointed in writing for that purpose; and
- evaluate, as far as is reasonably practicable, the stability of the ground before excavation work begins.

A contractor who performs excavation work-
- must take reasonable and sufficient steps in order to prevent, as far as is reasonably practicable, any person from being buried or trapped by a fall or dislodgement of material in an excavation;
- may not require or permit any person to work in an excavation which has not been adequately shored or braced: Provided that shoring and bracing may not be necessary where-
- the sides of the excavation are sloped to at least the maximum angle of repose measured relative to the horizontal plane; or such an excavation is in stable material: Provided that-
    - permission has been given in writing by the appointed competent person contemplated above upon evaluation by him or her of the site conditions; and
    - where any uncertainty pertaining to the stability of the soil still exists, the decision from a professional engineer or a professional technologist competent in excavations is decisive and such a decision must be noted in writing and signed by both the competent person and the professional engineer or technologist, as the case may be;
- must take steps to ensure that the shoring or bracing contemplated in paragraph
- is designed and constructed in a manner that renders it strong enough to support the sides of the excavation in question;
- must ensure that no load, material, plant or equipment is placed or moved near the edge of any excavation where it may cause its collapse and consequently endangers 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;
- must 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 to ensure the stability of such building, structure or road and the safety of persons;
- must cause convenient and safe means of access to be provided to every excavation in which persons are required to work, and such access may not be further than six meters from the point where any worker within the excavation is working;
- must 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, and must before the commencement of excavation work that may affect any such service, take the steps that are necessary to render the circumstances safe for all persons involved;
- must ensure that every excavation, including all bracing and shoring, is inspected-
    - daily, prior to the commencement of each shift;
    - after every blasting operation;
    - after an unexpected fall of ground;
    - after damage to supports; and
    - after rain,
- by the competent person contemplated in subregulation (1), in order to ensure the safety of the excavation and of persons, and those results must be recorded in a register kept on site and made available on request to an inspector, the client, the client's agent, any other contractor or any employee;
- must cause every excavation which is accessible to the public or which is adjacent to public roads or thoroughfares, or whereby the safety of persons may be endangered, to be-
    - adequately protected by a barrier or fence of at least one metre in height and as close to the excavation as is practicable; and
    - provided with warning illuminants or any other clearly visible boundary indicators at night or when visibility is poor, or have resort to any other suitable and sufficient precautionary measure where this is not practicable;
- must ensure that all precautionary measures stipulated for confined spaces as determined in the General Safety Regulations, 2003, are complied with by any person entering any excavation;
- must, where the excavation work involves the use of explosives, appoint a competent person in the use of explosives for excavation, and must ensure that a method statement is developed by that person in

accordance with the applicable explosives legislation; and

- must cause warning signs to be positioned next to an excavation within which or where persons are working or carrying out inspections or tests.

1.34 Demolition work

A contractor must appoint a competent person in writing to supervise and control all demolition work on site.

A contractor must ensure that before any demolition work is carried out, and in order to ascertain the method of demolition to be used, a detailed structural engineering survey of the structure to be demolished is carried out by a competent person and that a method statement on the procedure to be followed in demolishing the structure is developed by that person.

During a demolition, the competent person contemplated in above must check the structural integrity of the structure at intervals determined in the method statement contemplated in above, in order to avoid any premature collapses.

A contractor who performs demolition work must with regard to a structure being demolished, take steps to ensure that-

- no floor, roof or other part of the structure is overloaded with debris or material in a manner whichwould render it unsafe;
- all reasonably practicable precautions are taken to avoid the danger of the structure collapsing when any part of the framing of a framed or partly framed building is removed, or when reinforced concrete is cut; and
- precautions are taken in the form of adequate shoring or other means that may be necessary to prevent the accidental collapse of any part of the structure or adjoining structure;
- ensure that no person works under overhanging material or a structure which has not been adequatelysupported, shored or braced;
- ensure that any support, shoring or bracing contemplated in paragraph *(b),* is designed and constructedso that it is strong enough to support the overhanging material;
- where the stability of an adjoining building, structure or road is likely to be affected by demolition work on a structure, take steps to ensure the stability of such structure or road and the safety of persons;
- 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, and must before the commencement of demolition work that may affect any such service, take the steps that are necessary torender circumstances safe for all persons involved;
- cause every stairwell used and every floor where work is being performed in a building being demolished, to be adequately illuminated by either natural or artificial means;
- cause convenient and safe means of access to be provided to every part of the demolition site in whichpersons are required to work; and
- erect a catch platform or net above an entrance or passageway or above a place where persons work or pass under, or fence off the danger areas if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe where there is a danger or possibility of persons being struck by falling objects.

A contractor must ensure that no material is dropped to any point, which falls outside the exterior walls of the structure, unless the area is effectively protected.

No person may dispose of waste and debris from a high place by a chute unless the chute-

- is adequately constructed and rigidly fastened;
- if inclined at an angle of more than 45 degrees to the horizontal, is enclosed on its four sides;
- if of the open type, is inclined at an angle of less than 45 degrees to the horizontal;
- where necessary, is fitted with a gate at the bottom end to control the flow of material; and dischargesinto a container or an enclosed area surrounded by barriers.

A contractor must ensure that every chute used to dispose of rubble is designed in such a manner that rubble does not free-fall and that the chute is strong enough to withstand the force of the debris travelling along the chute.

A contractor must ensure that no equipment is used on floors or working surfaces, unless such floors or surfaces are of sufficient strength to support the imposed loads.

Where a risk assessment indicates the presence of asbestos, a contractor must ensure that all asbestos related work is conducted in accordance with the Asbestos Regulations 2001.

Where a risk assessment indicates the presence of lead, a contractor must ensure that all lead related work is conducted in accordance with the Lead Regulations, 2001.

Where the demolition work involves the use of explosives, a method statement must be developed in accordance with the applicable explosives legislation, by an appointed person who is competent in the use of explosives for demolition

work and all persons involved in the demolition works must adhere to demolition procedures issued by the appointed person.

A contractor must ensure that all waste and debris are as soon as reasonably practicable removed and disposed of from the site in accordance with the applicable legislation

1.35 Tunnelling

No person may enter a tunnel, which has a height dimension of less than 800 millimetres.

1.36 Scaffolding

A contractor must appoint a competent person in writing who must ensure that all scaffolding work operations are carried out under his or her supervision and that all scaffold erectors, team leaders and inspectors are competent to carry out their work.

A contractor using access scaffolding must ensure that such scaffolding, when in use, complies with the safety standards incorporated for this purpose into these Regulations under section 44 of the Act.

1.37 Bulk mixing plant

A contractor must ensure that the operation of a bulk mixing plant is supervised by a competent person who has been appointed in writing and is-

(a) aware of all the dangers involved in the operation thereof; and

(b) conversant with the precautionary measures to be taken in the interest of health and safety.

No person supervising or operating a bulk mixing plant may authorize any other person to operate the plant, unless that person is competent to operate a bulk mixing plant.

A contractor must ensure that the placement and erection of a bulk mixing plant complies with the requirements set out by the manufacturer and that such plant is erected as designed.

A contractor must ensure that all devices to start and stop a bulk mixing plant are provided and that those devices are placed in an easily accessible position and constructed in a manner to prevent accidental starting.

A contractor must ensure that the machinery and plant selected is suitable for the mixing task and that all dangerous moving parts of a mixer are placed beyond the reach of persons by means of doors, covers or other similar means.

No person may remove or modify any guard or safety equipment relating to a bulk mixing plant, unless authorized to do so by the appointed person contemplated in sub regulation (1).

A contractor must ensure that all precautionary measures stipulated for confined spaces as determined in the General Safety Regulations, 2003, are complied with when entering any silo.

A contractor must ensure that a record is kept of all repairs or maintenance to a bulk mixing plant and that the record is available on site to an inspector, the client, the client's agent or any employee.

1.38 Rope Access Work

A contractor must

- appoint a competent person in writing as a rope access supervisor with the duty of supervising all rope access work on the site, including the duty of ensuring occupational health and safety compliance in relation to rope access work: Provided that the appointment of any such person does not relieve the construction manager of any personal accountability for failing in his management duties in terms of this regulation;
- ensure that all rope access work on the construction site is carried out under the supervision of a competent person; and
- ensure that all rope access operators are competent and licensed to carry out their work.

No contractor may use or allow the use of rope access work unless-

- the design, selection and use of the equipment and anchors comply with the safety standards incorporated for this purpose into these Regulations under section 44 of the Act; and
- he or she is in possession of a site specific fall protection plan developed by a competent person applicable to the specific work and environment prior to the commencement of the work, including

records of maintenance and inspections of all the equipment used for the work operations.

A contractor must ensure that adequate measures are in place to allow rescue procedures to commence immediately in the event of a fall incident taking place

1.39 Hazardous Chemical Substances (HCS)

In addition to the requirements in the HCS Regulations, the principal contractor must provide proof in the Health and Safety Plan that:

- Material Safety Data Sheets (MSDS's) of the relevant materials / hazardous chemical substances are available prior to use by the contractor. All MSDS's shall be available for inspection by the agent at all times.
- Risk assessments are done at least once every 6 months.
- Exposure monitoring is done according to OESSM and by an Approved Inspection Authority (AIA) and that the medical surveillance programme is based on the outcomes of the exposure monitoring.
    - How the relevant HCS's are being/going to be controlled by referring to:
        - Limiting the amount of HCS
        - Limiting the number of employees
        - Limiting the period of exposure
        - Substituting the HCS
        - Using engineering controls
        - Using appropriate written work procedures
    - The correct PPE is being used.
    - HCS are stored and transported according to SABS 072 and 0228.
    - Training with regards to these regulations was given.

The Health and Safety plan should make reference to the disposal of hazardous waste on classified sites and the location thereof (where applicable).

The First Aider must be made aware of the MSDS and trained in how to treat HCS incidents appropriately.

1.40 Noise Induced Hearing Loss

Where noise is identified as a hazard the requirements of the NIHL regulations must be complied with and the following must be included / referred to in the Health and Safety Plan:

- Proof of training with regards to these regulations.
- Risk assessment done within 1 month of commencement of work.
- That monitoring carried out by an AIA and done according to SABS 083.
- Medical surveillance programme established and maintained for the necessary employees.
- Control of noise by referring to:
    - Engineering methods considered
    - Admin control (number of employees exposed) considered
    - Personal protective equipment considered/decided on
- Describe how records are going to be kept for 40 years.

1.41 Explosives and Blasting

The Contractor shall ensure that the use of explosives and blasting (where required) be undertaken by a specialist contractor or a sub-contractor with proven track record in the type of work to be performed. Contractor may only use explosives for work purposes where the following conditions in place:

- Explosives Regulations to be complied with in all respects.
- Contractor must be in possession of a Blasting Licence
- Blasting permit to be obtained
- Permit to transport explosives to be obtained
- Method statement to be drawn up and approved by professional team
- Municipal authorities may require advance notice of planned use of explosives
- Contractor must notify Provincial Director of Department of Labour on Annexure 2 at least 7 days prior to blasting taking place

- Contractor must have Workmans Compensation and appropriate insurances in place

1.42 Personal Protective Equipment (PPE)

The Contractor shall carry out PPE or clothing needs analysis in accordance with his risk assessment, to determine the necessary PPE or clothing to be used during construction. The Contractor shall make provision and keep adequate quantities of SABS approved PPE or clothing on site at all times. The Contractor must ensure that lost, stolen, worn out or damaged PPE is replaced as required and receipt signed for by employees on site.

1.43 Asbestos

The Contractor shall ensure that all asbestos work is done only by registered "Asbestos Contractor" as prescribed by the Asbestos Regulations, 2001. The Contractor shall submit an Asbestos Certificate from Department of Labour whichrefer to the prescribed requirements. The Contractor shall notify The Client if there are any asbestos materials to be used on site.

Besides the requirements listed above, should asbestos be identified as a hazard at the workplace, the following must be included in the health and safety plan or as soon as its available:

- Notification to the Provincial Director in writing, prior to commencement of asbestos work.
- Proof of a structured medical surveillance programme, drawn up by an occupational medicine practitioner.
- Proof that an initial health evaluation was carried out by an occupational health practitioner within 14 days after commencement of work.
- Copies of the results of all assessments, exposure monitoring and the written inventory of the location of the asbestos at the workplace.
- Only proof that medical surveillance has been conducted and not the actual records itself since these areas of a confidential nature.
- How records are going to be kept safe for the stipulated period of 40 years.
- Proof that asbestos demolition (if applicable) is going to be done by a registered asbestos contractor and provide proof that a plan of work for such demolition is submitted to an Approved Asbestos Inspection Authority 30 days prior to commencement of the demolition.
- Provide proof that the plan of work was approved by the asbestos AIA and submitted to the provincial director 14 days prior to commencement of demolition work together with the approved standardized procedures for demolition work.

1.44 Pressure Vessels (Including Gas Bottles)

The Contractor shall comply with Pressure Vessel Regulations, including:

- Providing competency and awareness training to the operators;
- Providing PPE or clothing;
- Providing and maintain appropriate signage in areas where pressure vessels are used, as applicable;
- Inspect equipment regularly and keep records of inspections;
- Providing appropriate firefighting equipment (Fire Extinguishers).

1.45 Fire Extinguishers and Fire Fighting Equipment

The Contractor shall provide adequate, regularly serviced fire extinguishers located at strategic points on site. The Contractor shall keep spare serviced portable fire extinguishers. The Contractor shall have adequate persons trained or competent to use the Fire Fighting Equipment.

Safety signage shall be posted up in all areas where fire extinguishers are located.

1.46 Lifting Machinery and Tackle

The Contractor shall ensure that lifting machinery and tackle is inspected before use and on a monthly basis. The Contractor shall have lifting machinery and tackle inspector who will inspect the equipment at intervals required by the Driven Machinery Regulations, taking into account that:

- All lifting machinery and tackle have a safe working load clearly indicated;
- Regular inspection and servicing is carried out;
- Records are kept of inspections and of service certificates;
- Thorough examinations are carried out by competent personnel at the frequencies required by legislation
- There is proper supervision in terms of guiding the loads which includes a trained banks man to direct and

check lifting tackle if it is safe for use.

1.47 Ladders and Ladder work

The Contractor shall ensure that all ladders are numbered and inspected regularly keeping record of inspections. It should be noted that Aluminium ladders are preferred to wooden ladders.

1.48 General Machinery

The Contractor shall comply with the Driven Machinery Regulations, which include inspecting machinery regularly, appointing a competent person to inspect and ensure maintenance, issuing PPE or clothing and training those that use machinery and enforce compliance.

1.49 Portable Electrical Tools / Explosive Actuating Fastening Devices

The Contractor shall ensure that use and storage of all explosive actuating fastening devices and portable electrical tools are in compliance with relevant legislation. The Contractor shall consider that:

- A competent person undertakes routine inspections;
- Only authorised persons use the tools;
- There are safe working procedures applied;
- Awareness training is carried out and compliance is enforced at all times; and
- PPE and clothing is provided and maintained.

1.50 High Voltage Electrical Equipment

The Contractor shall ensure that, where the work is under, on or near high-voltage electrical equipment the Electrical Installation Regulations, together with safety instructions (Regulations of the Owner of the Equipment) are complied with. Such equipment includes: -

- Eskom and the Local Authority equipment
- The Contractor's own power supply; and
- Electrical equipment being installed but not yet taken over from a Contractor by The Client.

1.51 Public Health and Safety

The Contractor shall ensure that each person working on or visiting a site, and the surrounding community, shall be made aware of the dangers likely to arise from on site activities and the precautions to be observed to avoid or minimize those dangers. Appropriate health and safety signage shall be posted at all times.

Both the Client and the Contractor have a duty in terms of health and safety legislation to do all that is reasonably practicable to prevent members of the public and others being affected by the construction processes to be aware and put preventative measure in place. The public or visitors shall go through a brief health and safety induction detailing hazards and risks they may be exposed to and what measures are in place to control these hazards and risks.

1.52 Night Work

The Contractor shall not undertake any night work without prior arrangement and a written permit from the Client. The Contractor shall ensure that adequate lighting is provided for all night work and failure to do so shall result in work being stopped.

1.53 Environmental Conditions and Flora and Fauna

The Contractor must be mindful of adverse weather conditions upon the health and safety of the workforce. This includes inclement weather, strong wind, heat stress, extreme cold, etc. The Contractor's risk assessment process must take into account the risks associated with such weather conditions. The same is true when working in an environment where there is a risk to employees' health and safety from presence of poisonous flora, or wildlife (including bees, snakes, etc). The Contractor's risk assessment process must take into account these risks.

1.54 Occupational Health

Exposure of workers to occupational health hazards and risks are very common in any work environment, especially in construction. Occupational health hazards and risks exposure is a major problem and all Contractors are to ensure that proper health and hygiene measures are put in place to prevent exposure to these hazards and risks. The occupational hazards and risks may enter the body in three ways:

- Inhalation through breathing e.g. cement dust;
- Ingestion through swallowing maybe through food intake;
- Absorption through the skin (pores) e.g. painting or use of thinners.

The contractor is required to ensure that all his personnel are medically fit prior to being allowed onto the work site.

All Contractors should ensure that Occupational Hygiene surveys are conducted as per the Occupational Health and Safety Act to ensure employees are not exposed to hazards. Risk Assessments should identify areas where surveys are to be conducted.

The Contractor shall submit Annexure A with the Tender Document.

Item No.	HSS Requirement	OHSA Requirement	Submission date
1.	Notification of Intention to Commence Construction	Construction Regulations 2014	At least 7 days before commencement on site
2.	Construction Work Permit	Construction Regulations 2014 (but only comes into effect from August 2015, and only with certain size and duration projects)	At least 30 days prior toproject commencement
3.	Assignment of Responsible Person to Manage Building Work	Construction Regulations 2014	Before on site commencement
4.	Competency for Responsible Persons	Client / Client Agent requirement	Before on site commencement
5.	Compensation of Occupational Injuries and Diseases Act (COIDA) 130 of 1993	COIDA Requirement	Before on site commencement
6.	Occupational Health.and Safety Policy	Client / Client Agent requirement	At tender stage
7.	Health and Safety Organogram.	Client / Client Agent requirement	Beforeon site commencement
8.	Risk Assessment, Safety Plan and Fall Protection Plan, Demolition Method Statement	Client / Client Agent requirement	Before construction workcommences

Assignment of Contractor's Responsible Persons

ANNEXURE B - The contractor shall make the following appointments but not limited to:

Chief Executive Officer (OSHACT 16(1)	**Tel:**
Contract Director/Manager (OSHACT 16(2)	**Tel:**
Construction Manager (CR 8(1)	**Tel:**
Construction Supervisor (CR 8(7)	**Tel:**
Assistant Construction Supervisor (CR 8(8)	**Tel:**
Construction Safety Officer (CR 8(5)	**Tel:**
Traffic Safety Officer	**Tel:**
Safety Representative (where > 20 employees on site)	**Tel:**
Temporary work Designer (CR 12(1)	**Tel:**
Temporary work Supervisor (CR12(2)	**Tel:**
Construction risk assessor (CR 9(1))	**Tel:**
Excavation Supervisor (CR13(1)(a)	**Tel:**
Demolition Supervisor (CR14(1)	**Tel:**
Scaffold Supervisor (CR16(1)	**Tel:**
Suspended Platform Supervisor (CR17(1)	**Tel:**
Material Hoist Inspector (CR19(8)(a)	**Tel:**
Material Hoist Operator (CR19(6)	**Tel:**
Bulk Mixing Plant Supervisor (CR20(1)	**Tel:**
Bulk Mixing Plant Operator (CR20(2)	**Tel:**
Controller of Explosive Actuated Fastening Devices Nails, Cartridges or Studs Issue and Collection (CR21(2)(g)(1)	**Tel:**
Construction Vehicle and Mobile Plant Operator (CR23(1)(d)(i)	**Tel:**
Controller of Temporary Electrical Installations (CR24(c)	**Tel:**
Stacking Supervisor (CR28(a)	**Tel:**
Fire Extinguishing Equipment Inspector (CR29(h)	**Tel:**
Fall Protection Plan Developer (CR 10(1)(a)	**Tel:**
Incident Investigator (OSHACT 9(2)	**Tel:**
Competent Person – Confined Spaces (GAR 5(1)	**Tel:**

OTHER HSS REQUIREMENTS

ANNEXURE C

The contractor shall comply and not be limited to the following requirements:

What	When	Output	Reference information
Awareness training (Toolbox Talks)	Weekly and before hazardous work is carried out	Attendance Register	
Health and Safety Committee Meetings	Monthly	Minutes signed by the employer (Contractor) Covering: a) Health and Safety Representative Checklist	
Health and Safety Reports	Monthly	Report covering: a) Incidents/Accidents and Investigations b) Non conformance c) Health and Safety Training d) HIRA Updates e) Internal and External Audits	Incident reporting and investigation for The Client & Contractor form
General Inspections	As per HSS and OHSA	Report on HSS and OHSA compliance: a) Scaffolding b) Lifting Machinery c) Excavations	
General Inspections	Monthly	Covering: a) Fire fighting Equipment b) Portable Electrical Equipment c) Ladders	
Record keeping	Ongoing	Covering: a) General complaints b) Fines c) General incidents d) MSDS e) Surveillance Medicals f) Inspection Register	
Permits	Before commencement with certain activities	As stipulated by the HSS and the OHSA / Construction Regulations	

BASELINE RISK ASSESSMENT FOR PROJECT

Irrespective of the risk presented on site, it will be ensured that sufficient supervision is in place on site, thatpersonnel are trained in accordance with legislation, including the requirement for site specific inductions on site to inform personnel on site of the risks and hazards applicable to the site. Site supervision is responsible for ensuring that the control measures required below are implemented on site.

	HAZARD	RISK	RISK RATING (High / Medium / Low)	MINIMUM CONTROL MEASURES
1.	Asphalting	Fire Burns to skin Skin disease	High	• Suitable fire extinguisher to be in place prior to commencement of works • Ensure competent personnel using materials and competent and trained machinery/equipment operators • Ensure there is a safe place of work at all times • Ensure all personnel wear suitable and sufficient personal protective equipment (PPE) • Health and safety data sheet required
2.	Compacting and Filling	Contact with tipping materials Contact with moving plant Vehicles/personnel falling into excavations Contact with underground services	Medium	• Trained banksman to control vehicles movement • Only trained personnel use plant • Personal Protective Equipment to be worn • Personnel to stand clear as materials are being tipped • Use stop blocks and signs to warn vehicles of excavations, where applicable • Stand clear of plant whilst materials are being compacted • Establish position of underground services and protect services from damage
3.	Compactor Operations	Crushing of feet	Medium	• Only trained and competent personnel to use the machine • Ensure operative wears steel toe cap shoes or boots at all times
4.	Cutting Kerbs	Saw slipping, Blade disintegrating, Noise and dust	Medium	• Only trained operators to use saw and change blades. • Personal Protective Equipment must be worn. Gloves, goggles, dust mask and hearing protection. • People to be kept away from the work area. • Work to cease if people have to pass. • Sparks etc. to be directed away from people and any flammable material.
5.	Cutting Off Disc	Noise Cuts from machine Fire (particularly at refuelling) Flying debris Blade shattering Contamination by fume created or exhaust fume	Medium	• Use competent personnel. • Hot works control- fire extinguisher, fire watchman. (Permit may be required) • PPE to include gloves, eye protection, hearing protection • Solid working position. • Clear working area • Correct grade of blade must be used. • Good ventilation to be provided (forced if necessary). • Changing of wheels to be by competent persons only • Cut off discs must not be used for grinding (grinding disc thicker) • Bystanders to wear hearing protection, as applicable

	HAZARD	RISK	RISK RATING (High / Medium / Low)	MINIMUM CONTROL MEASURES
6.	Electric Tools and Electrical Installations	Electric shock Fire	Low	• Electric tools and installations to be in good condition • Inspect electric tools before use • Do not use electric tools in wet/damp conditions • Use personal protective equipment such as insulated gloves • Electrical installations register to be maintained, inspected by competent person
7.	Fire	Injuries to workers, pedestrians, residents, road users, damage to property through fire	Medium	• No littering on site which could become fire hazard, maintain site in clean condition. • No fires to be lit on site. Have a working fire extinguisher at hand at all times. • No smoking or naked flame near flammable substances or in unauthorised areas • Ensure proper storage/use of Petrol/diesel/flammable substances – post warning notices
8.	Hand tools	Injuries caused by use of hand tool Impact with the tool Falls due to access problems Contamination with substance being worked	Low	• Ensure: • Tool is correct for job • Tool is in good order and suitably sharp • Personnel must be competent/instructed in tool usage and tool safely • Lighting is sufficient • Access is safe, working platform is secure, leading edge is guarded • Operative is wearing all necessary PPE
9.	Hazardous Substances	Injuries to workers through use of hazardous substances, eg: injuries to eyes, skin, etc	Medium	• Use substances in accordance with data sheet, particularly reference protective clothing required (example: gloves, goggles, etc) • Know what First Aid measures are • Have welfare facilities available for washing of hands, etc
10.	Hot Works	Burns to eyes or other parts of the body	Medium	• Personal Protective Equipment to include eye, skin and hearing protection • Respirator maybe be required where cutting galvanized steel or anywhere else toxic fumes and gases arise. Dust can also be a problem and forced ventilation may be required.
11.	Kerb Laying	Nips at joints Crushing by kerbs Caustic burns	Low	• Impervious gloves and barrier cream to be used to protect hands. • Personnel should be aware of safe manual handling techniques when handling kerbs.

	HAZARD	RISK	RISK RATING (High / Medium / Low)	MINIMUM CONTROL MEASURES
12.	Manual Handling of General Items	Muscular skeletal injuries if the load is too heavy or awkward Operative falling/ tripping Contamination from the substance being carried Fall of material being carried	Medium	• Personnel should be aware of safe manual handling techniques • Personnel to wear Personal Protective Equipment when carrying items, eg: safety footwear and gloves. • Ensure good housekeeping against tripping/fall hazards. • Operative to get assistance if load too heavy- team lift if necessary. • Utilise mechanical lifting and carrying aids where possible. • Personnel to ensure access equipment, ladders will take weight of operative and load being carried. • Personnel to ensure item being carried is properly bonded or is not be liable to break apart whilst being manually handled.
13.	Noise and Dust	Breathing in dust can cause long term health problems, noise can damage hearing	Medium	• Wear respiratory and hearing protection • Dampen down and minimise dust where possible.
14.	Overhead Services (Working near)	Contact with live services causing injury to personnel Damage caused to services	Medium	• Maintain safe clearance levels • Establish presence of any services via proper walk through survey of site and/or means of service drawings • Wear personal protective clothing • Ensure height of plant/vehicles does not compromise or exceed clearance levels for overhead services • Obtain information on clearance levels from service provider
15.	Plant or Vehicles and Equipment Operation	Workers injured by passing traffic Road users and pedestrians at risk from operation of tractor and mower Noise	High	• Implement traffic protection measures • Trained and competent operators must be used • Check plant and vehicles on daily basis before use and record inspections. Maintain vehicles in safe condition. • Medical certificates of fitness required for construction plant. • Crossing of road by construction vehicles or machines must be limited to the practical minimum • Plant and vehicles must be fitted with amber rotating beacons and reverse alarms. • Wear appropriate protective clothing/equipment, eg: goggles, gloves, ear defenders, etc as appropriate.
	HAZARD	**RISK**	**RISK RATING (High / Medium / Low)**	**MINIMUM CONTROL MEASURES**
16.	Protection of Members of Public	Injury to member of public and road users from site works	High	• Barriers and signage to be in place • Workers must warn away any members of public from the works • Footpaths and bridges which are open to public must be closed off if in area of works or otherwise made safe so that no injury occurs to members of public • Traffic turning into site – traffic management and signage as required. • Signage to be on road at site entrance warning motorists that construction traffic turning into/out of site access. Keep roads free of mud where possible • Refer to plant risk assessment for details on plant safety precautions • **NOTE: SIGNAGE TO BE POSTED ON SITE TO WARN OF CONSTRUCTION TRAFFIC MOVEMENTS. SAFE MEANS OF ACCESS FOR BOTH CONSTRUCTION TRAFFIC TO SITE AND PRIVATE HOMEOWNERS MUST BE AGREED.**
17.	Road Construction	Risk of being struck by vehicles	High	• Ensure traffic management measures in place • No construction activities to commence until

				adequate provision made to accommodate traffic in accordance with the South African Traffic Signs Manual. • Wear reflective waistcoats when working on or near the road or road shoulder as well as any other required personal protective clothing. • Crossing of road by personnel must be limited to the practical minimum • Use of fencing or other barriers as appropriate
18.	Road Working – working in or next to road	Injury to workers caused by passing traffic Injury to road users and pedestrians by works	High	• **Flagmen to be used where interface with construction plant with passers-by or where hazard posed by delivery vehicles turning into/out of site.** • Traffic management plan to be approved by Municipality and, if necessary, traffic department • No construction activities to commence until adequate provision made to accommodate traffic in accordance with the South African Traffic Signs Manual. • Use safety signage to warn traffic and pedestrians of construction works • Where existing walk ways/pavements affected by works, must direct pedestrian traffic away to safe walking area. • Wear reflective waistcoats when working on or near the road or road shoulder as well as any other required personal protective clothing. • Crossing of road by personnel must be limited to the practical minimum • Use of fencing or other barriers as appropriate
	HAZARD	**RISK**	**RISK RATING (High / Medium / Low)**	**MINIMUM CONTROL MEASURES**
19.	Scaffold Erection/ Dismantling	Personnel falling from a height Items of scaffold falling onto personnel Scaffold collapsing onto those below	High	Ensure • scaffold is designed to take the imposed loads • scaffolding is constructed properly • scaffold is not overloaded • scaffolders are fully trained • scaffolding is regularly checked by competent person and record of inspection retained. Written inspections to be recorded on weekly basis • scaffolders must adhere to the safe systems of work. • all fall arrest equipment to be checked and certified in good working order • that **ALL** understand the safe system of work
20.	White lining	Contact with moving vehicles Fire	High	• Ensure suitable and sufficient road signs are erected, as applicable • Possible road or lane closure may be required – traffic management may be required • Fire Extinguisher to be situated in a suitable area, use dry powder or foam

F1006 MEASUREMENT AND PAYMENT

Item **Unit**

F10.01 Contractor's obligations in respect of health and safety

(a) Works with value >R1 million day
(b) Minor Works with value <R1 million day

Payment of the tendered daily rate shall include full compensation for all costs resulting from complying with Occupational Health and Safety Act and its Construction Regulations and requirements in terms of health and safety requirements in respect of the contract as specified.

C3.4 STANDARD ANNEXES FOR INCLUSION INTO A WORK ASSIGNMENT CONTRACT (WHERE APPLICABLE)

CONTENTS

ANNEX 1

MONTHLY PROJECT LABOUR REPORT (NOT ISSUED)

ONCE APPOINTED THE CONTRACTOR SHALL OBTAIN THE REPORT TEMPLATE FROM DIHLABENG LOCAL MUNICIPALITY

ANNEX **DIHLABENG LOCAL MUNICIPALITY**

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

B-BBEE SUB-CONTRACT EXPENDITURE REPORT BASED ON PAYMENT CERTIFICATE NO. .....

Value of the contract (as defined in Schedule 20: Preferencing Schedule) (**P***)	R	B-BBEE Status Level of Prime Contractor	

Name of Sub-contractor (list all)	**B-BBEE Status Level of Sub-contractor[1]**	**Total value of Sub-contract (excl. VAT)[1]**	**Value of Sub-contract work to date (excl. VAT)[1]**	**Value of Sub-contract work to Sub-contractors with a lower B-BBEE Status Level than Prime Contractor**
Sub-contractor A		R	R	R
Sub-contractor B		R	R	R
Sub-contractor C		R	R	R

[1]Documentary evidence to be provided

Total:	R
Expressed as a percentage of **P***	%

Signatures

Declared by Contractor to be true and correct: ..... **Date:** .....

Verified by Engineer/ Engineer's Representative: ..... **Date:** .....

ANNEX **DIHLABENG LOCAL MUNICIPALITY**

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

JOINT VENTURE EXPENDITURE REPORT BASED ON PAYMENT CERTIFICATE NO. .....

Value of the contract (as defined in Schedule 20: Preferencing Schedule) (**P***)	R	B-BBEE Status Level of Joint Venture	

Name of Joint Venture partner (list all)	**B-BBEE Status Level of each JV partner as at contract award**	**Percentage contribution of JV partner per JV Agreement[1] A**	**Total value of JV partner's contribution (excl. VAT)[1] B = A% x P***	**Value of JV partner's contribution to date (excl. VAT)[1] C**	**Value of JV partner's contribution as a percentage of the work executed to date D = C/P*x100**
JV Partner A		%	R	R	%
JV Partner B		%	R	R	%
JV Partner C		%	R	R	%

[1]Documentary evidence to be provided

Signatures

Declared by Contractor to be true and correct: ..... **Date:** .....

Verified by Engineer/ Engineer's Representative: ..... **Date:** .....

ANNEX **DIHLABENG LOCAL MUNICIPALITY**

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

TARGETED LABOUR CONTRACT PARTICIPATION EXPENDITURE REPORT BASED ON CERTIFICATE NO. .....

Value of the contract (as defined in Schedule 20: Preferencing Schedule) (**P***)	R	Specified Targeted Labour Contract Participation Goal	%

Name of Contractor/Sub-contractor (list all)	**Total previous expenditure on wages in respect of targeted labour**	**Net Amount for this month[1]**	**Total expenditure on wages in respect of targeted labour**
Contractor	R	R	R
Sub-contractor A	R	R	R
Sub-contractor B	R	R	R

[1]Documentary evidence to be provided

Total:	R
Expressed as a percentage of **P***	%

Signatures

Declared by Contractor to be true and correct: ..... **Date** .....

Verified by Engineer/ Engineer's Representative: ..... **Date** .....

ANNEX **DIHLABENG LOCAL MUNICIPALITY**

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

TARGETED ENTERPRISES CONTRACT PARTICIPATION EXPENDITURE REPORT BASED ON CERTIFICATE NO. .....

Value of the contract (as defined in Schedule 20: Preferencing Schedule) (**P***)	R	Specified Targeted Enterprises Contract Participation Goal	%

Name of targeted enterprise (list all)	**Total previous expenditure (excl. VAT) to targeted enterprises**	**Net Amount for this month[1]**	**Total expenditure (excl. VAT) to targeted enterprises**
Targeted Enterprise A	R	R	R
Targeted Enterprise B	R	R	R
Targeted Enterprise C	R	R	R
		Total:	R
		Expressed as a percentage of **P***	%

[1]Documentary evidence to be provided

Signatures

Declared by Contractor to be true and correct: ..... **Date** .....

Verified by Engineer/ Engineer's Representative: ..... **Date** .....

ENGINEERING DRAWINGS

GENERAL LAYOUT

The general layout of the project notice board provides for a project title field in which the project is described and the client is identified. Below the project title field the board is divided into three vertical areas. The left hand side of this area is reserved for the seals/logos of the constituents of the BEP Grouping whose members may be commissioned to deliver professional services to the project. The central area is for listing the professional consultants on the project and the right hand area may be used for displaying individual company logos and any additional affiliation which the consultant may have in the BEP Grouping eg dual membership of SAIA and SABTACO.

RECOMMENDATIONS:

1 The names of all professional consultants involved in the project and the main contractor should be displayed on the project notice board.

2 Only bone fide members of the five constituents of the Built Environment Professions Grouping (ACPM, ASAQS, CESA, SABTACO and SAIA) may apply their association's seal/logo to the notice board.

3 When applied, this seal/logo is placed to the left of the named discipline and consultant, centered in the vertical space provided and central on the horizontal line separating the discipline name from the consultant's name.

4 Where a consultant is a member of more than one of the five BEP Grouping associations, the consultant may elect to display both associations' seals/logos. I this case, one appropriate seal is selected for display on the left hand side of the board while the other seal is displayed on the right hand side above the consultant's own logo (see item 7 below) – vertical spacing of the logos may require adjustment.

5 Where the contractor is a member of MBSA or SAFCEC these seals may be applied in the same way as the professional associations' seals, ie to the left of the named contractor (see item 3 above).

6 All parties are entitled to apply individual company logos in association with their names.

7 When applied, the consultants' logos are placed to the right of the named discipline and consultant, centered in the vertical space provided and central on the horizontal line separating the discipline name from the consultant's name.

8 The client's seal/logo is placed to the right hand side of the client's name in the bottom right hand portion of the project title field.

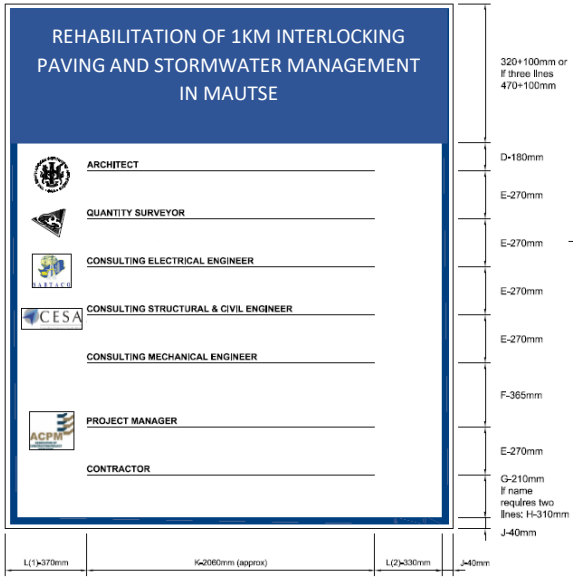
9 Seals/logos may either all be in full colour and reproduced faithfully according to specification of the association/orgnisation represented, or all in black and white , as may be agreed by the parties concerned, It is the responsibility of each consultant to ensure that the appropriate information is provided.

10 Seals/logos may either be provided in suitable electronic form or as print media, eg seal logo to full size, printed on transparent, adhesive media as supplied by the associations

11 Variations which determine the height of the board are indicated.

12 The signwriter should be issued with the relevant information for the board as well as copies of recommendation in hardcopy form. Alternatively the signwriter may be issued with the information in electronic form as long as these recommendations are clearly stated and followed.

13 Where the architect is not architect, principal consultant and principal agent, the order in which the parties are listed on the project board is by mutual agreement. The contractor is generally the last name to be listed.



TECHNICAL DATA

LETTERING & SETTING OUT:	TITLE BLOCK		100mm Arial bold upper and lower case letters in white.
	NAMES OF PRACTICES & FIRMS		75mm Arial bold upper and lower case letters in black. Allow 100mm between bottom of line and bottom of lettering.
	PROFFESIONAL TITLES		50mm Arial bold upper case letters only in black. Allow 10mm between line and professional titles.
	HORIZONTAL LINE		8mm thick in black
BORDERS, FIELDS & SEALS/LOGOS	OUTER BORDER		Dimension: 8mm wide Colour: White
	INNER BORDER		Dimension: 24mm wide Colour: Blue to match RGB 3;91;51 (R:3, G:91, B:151)
	TITLE BLOCK FIELD		Dimension: As specified below Colour: Blue to match RGB 3;91;51 (R:3, G:91, B:151)
	CONSULTANTS/ CONTRACTOR FIELDS		Dimension: As specified below Colour: White
	SEAL/LOGO ACTUAL SIZES		The full-size SAIA logo is 190mm diameter (reference dimension) - other seals/logos to be scaled accordingly
LEGEND:	A	170mm	The dimension from the top of the board to the bottom of the letters on the first line of the title block.
	B	320mm	The dimension from the top of the board to the bottom of the letters on the second line of the title block.
	C	470mm	The dimension from the top of the board to the bottom of the letters on the third line of the title block (if the title requires three lines)
	D	180mm	This dimension is standard, and is to the centre of the horizontal line.
	E	270mm	This dimension is standard if only one line is required for the practice name.
	F	365mm	This dimension is typical if two lines are required for the practice name.
	G	210mm	This dimension should be used where the last practice on the board requires only one line.
	H	310mm	This dimension should be used where the last practice on the board requires two lines.
	J	40mm	White border: 8mm wide Blue border: 32mm wide The blue border shall have a radius of 60mm to the corners.
	K	2060mm	This is an approximate dimension.
	L(1)	370mm	Allow: 40mm white and blue borders 330mm width for professional associations, contractors seals/logos
	L(2)	330mm	Net width for individual company logos

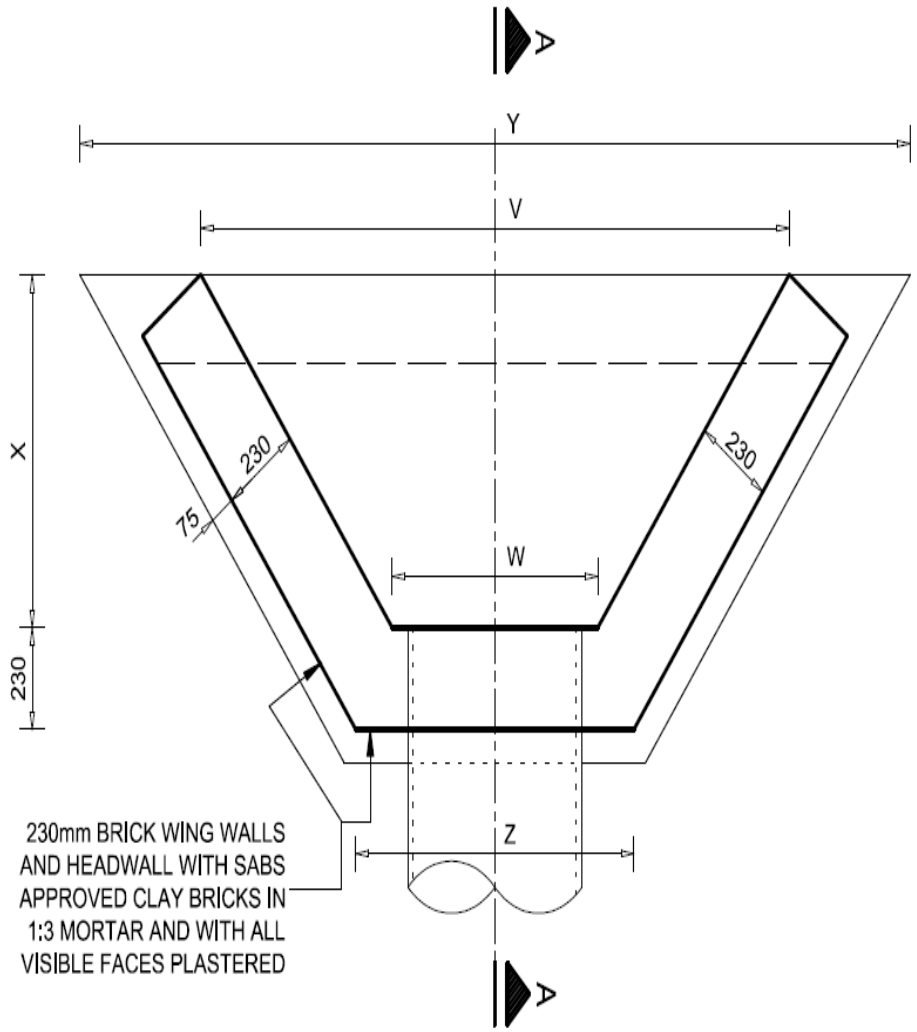
DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
PROJECT NAME BOARD

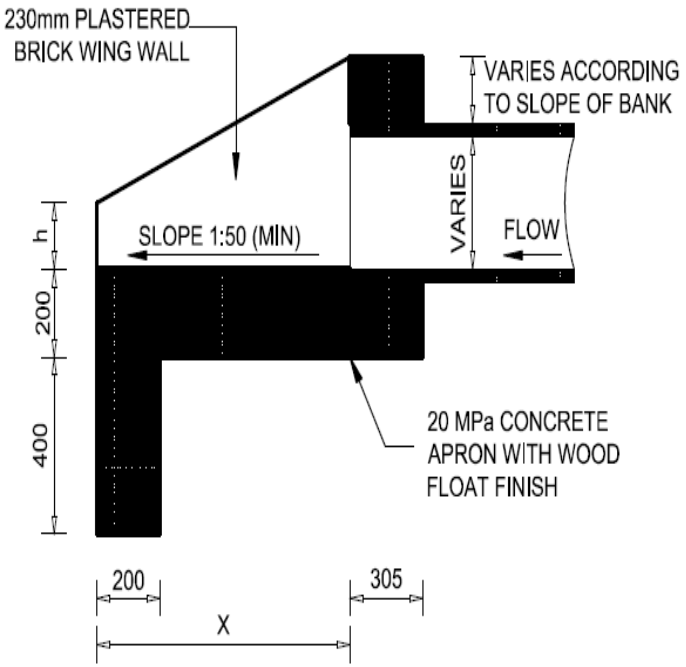
DRAWING NO.
RST 001

SCALE
N.T.S

DIMENSIONS FOR SETTING-OUT PURPOSES						
NOMINAL Ø	X	Y	Z	W	V	h
300	1000	2430	920	570	1725	260
375	1000	2510	1000	650	1805	260
450	1000	2590	1090	730	1885	260
525	1000	2680	1170	820	1975	350
600	1200	2990	1250	900	2285	350
675	1400	3310	1340	990	2605	350
750	1600	3625	1420	1070	2920	440
825	1800	3935	1500	1150	3230	440
900	2000	4255	1590	1240	3550	440



PLAN

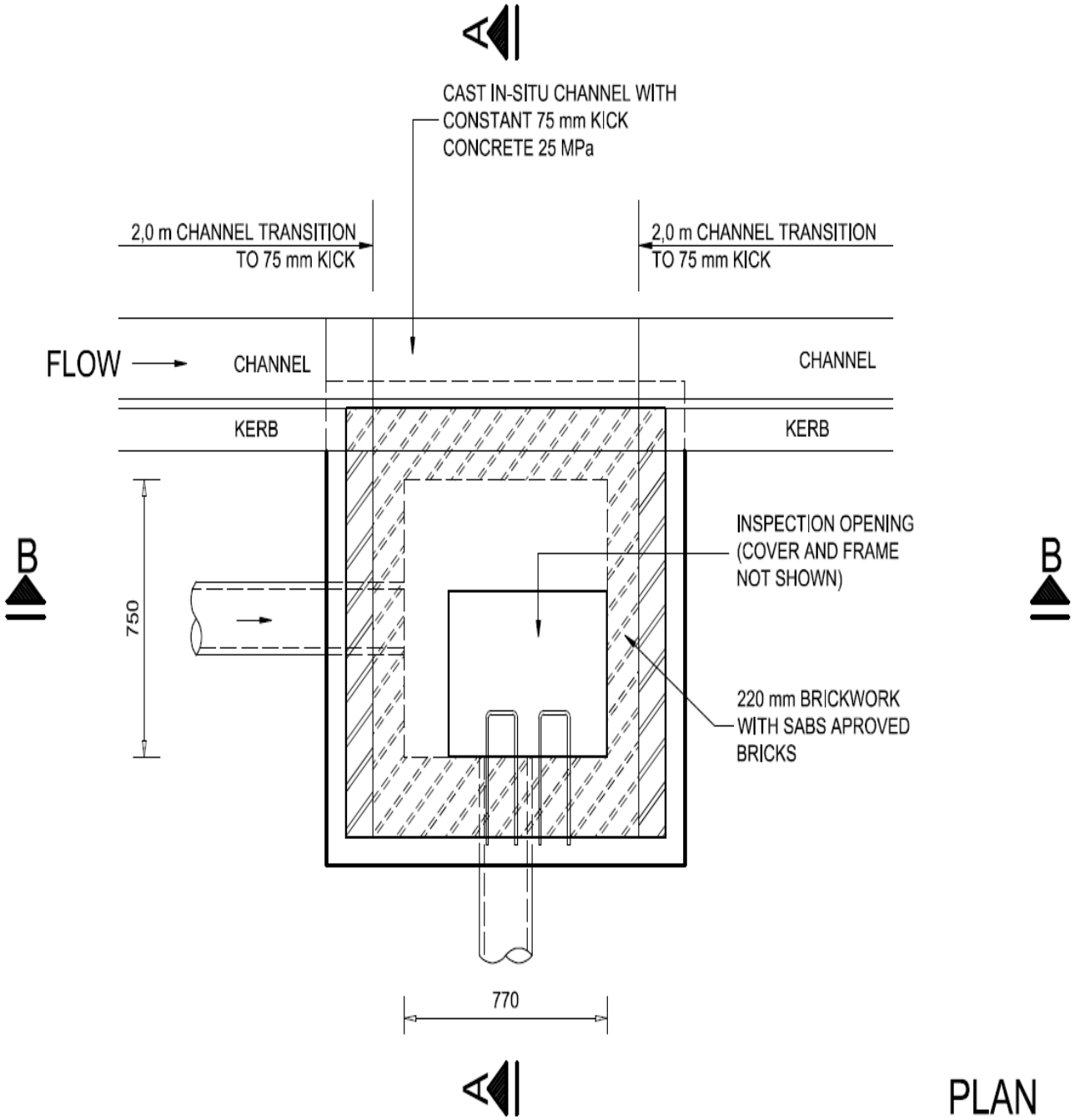


SECTION A - A

DRAWING DESCRIPTION
HEADWALL: TYPE 1

DRAWING NO.
RST 002

SCALE
1:20



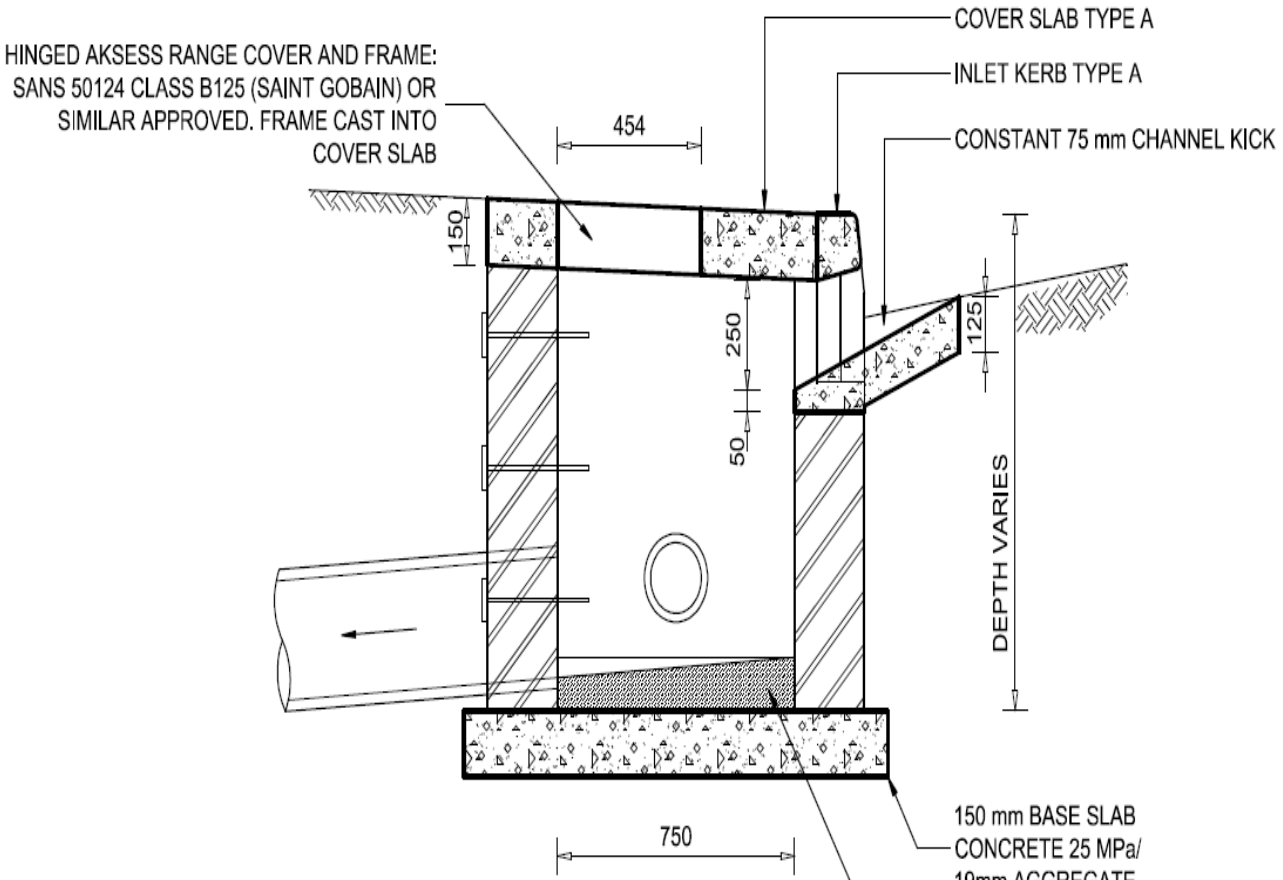
PLAN

DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
CATCHPIT: TYPE A – PLAN
(1 OF 3)

DRAWING NO.
RST 003

SCALE
1:20



SECTION A - A

NOTES:

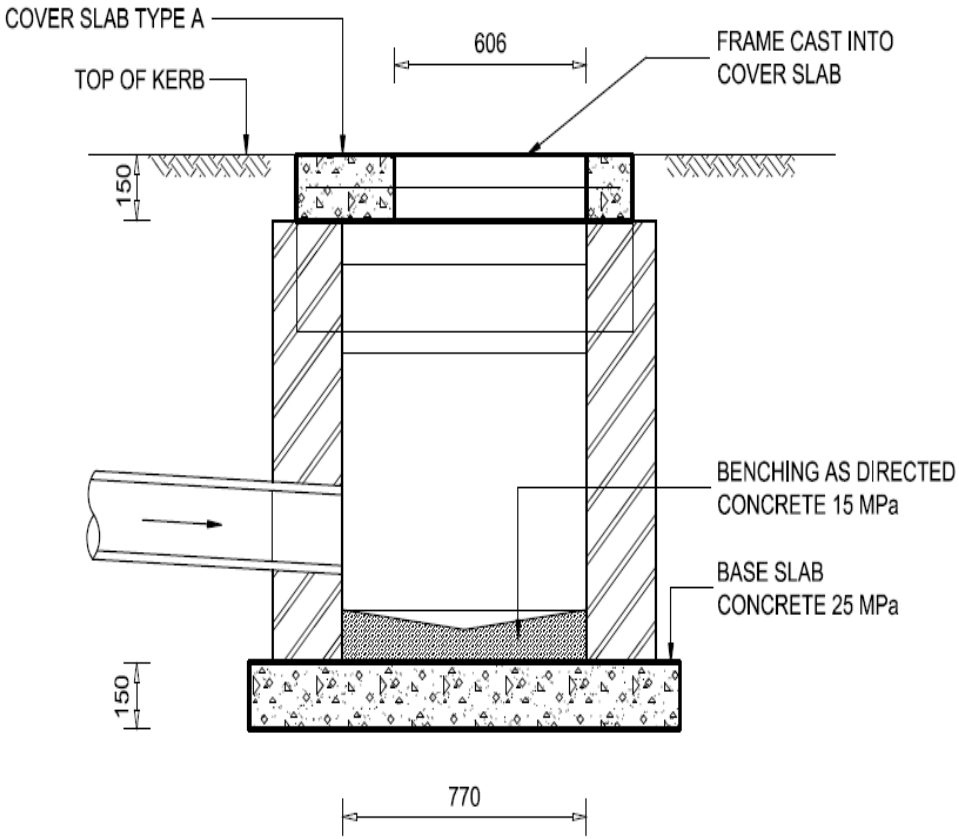
1. STEP IRONS TO BE STAGGERED AND PLACED TO SUIT BENCHING AT 300 mm c/c INTERVALS.
2. PIPE AND BENCHING ARRANGEMENT TYPICAL. VARIES WITH CIRCUMSTANCES.

DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
CATCHPIT: TYPE A – SECTION A-A
(2 OF 3)

DRAWING NO.
RST 004

SCALE
1:20

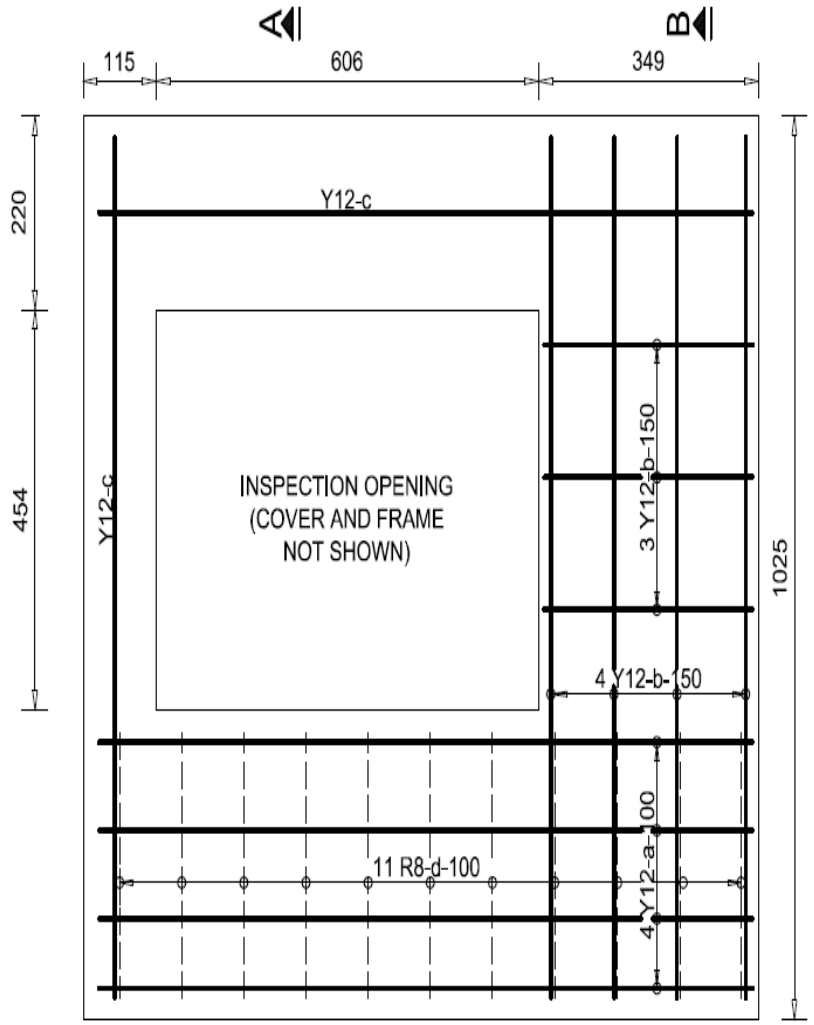


SECTION B - B

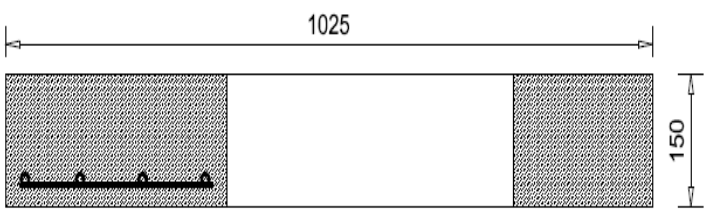
DRAWING DESCRIPTION
CATCHPIT: TYPE A – SECTION B-B
(3 OF 3)

DRAWING NO.
RST 005

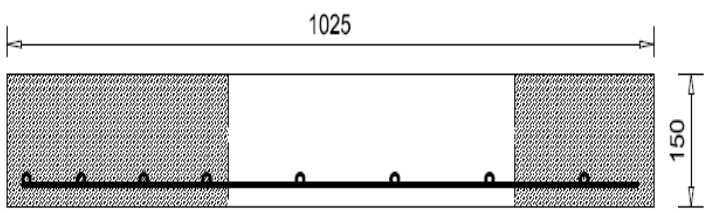
SCALE
1:20



PLAN LAYOUT ON
BOTTOM REINFORCEMENT



SECTION A - A



SECTION B - B

NOTES:

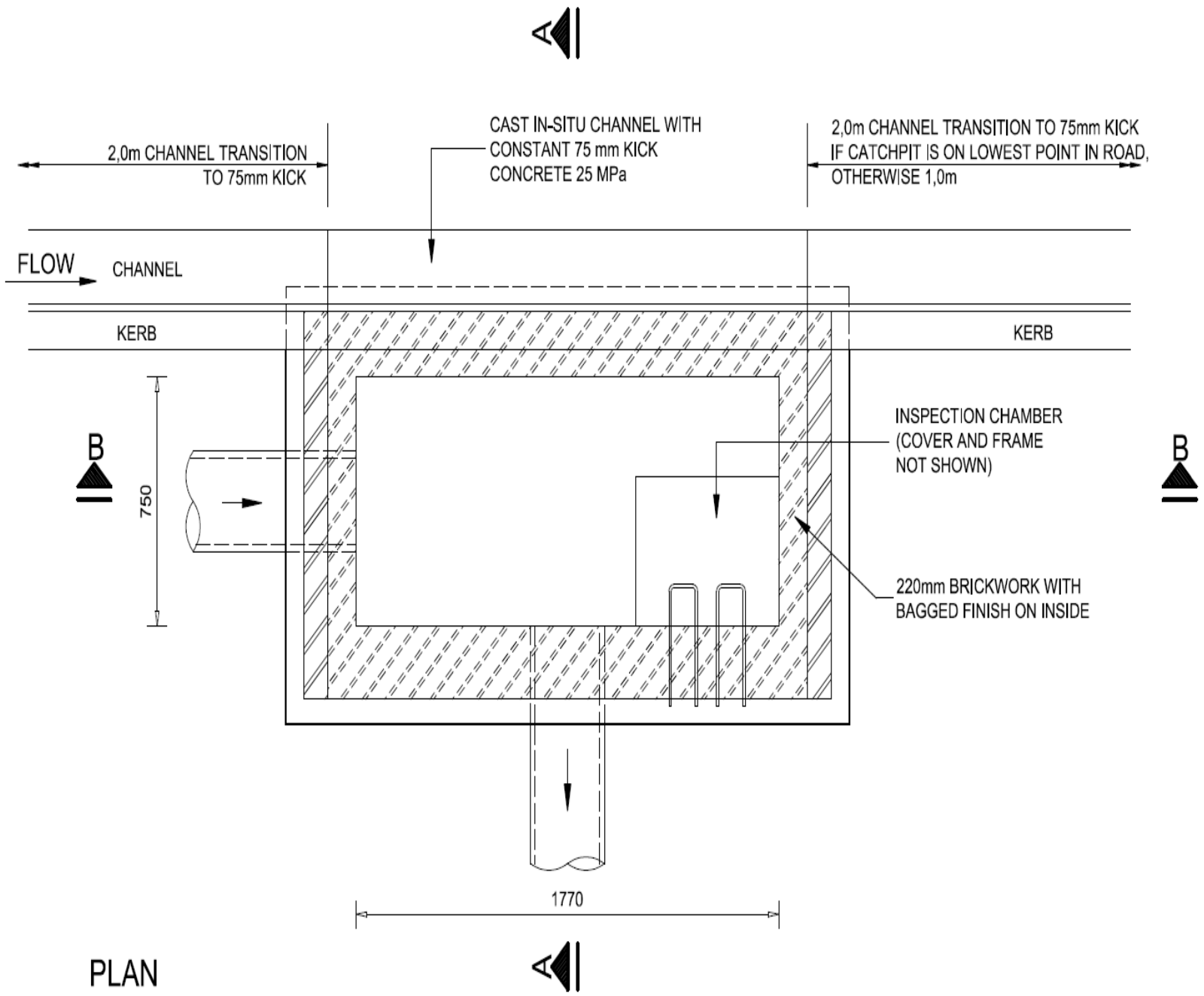
1. For use with Type A catchpits with max pipe diameter of 750mm.
2. Concrete 25 MPa.
3. 20mm Minimum cover over all reinforcement
4. Cover to be cast into cover slab
5. Cover slab to be in-situ.
6. Wood float finish to top of slab.

DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
SLAB COVER

DRAWING NO.
RST 006

SCALE
1:10

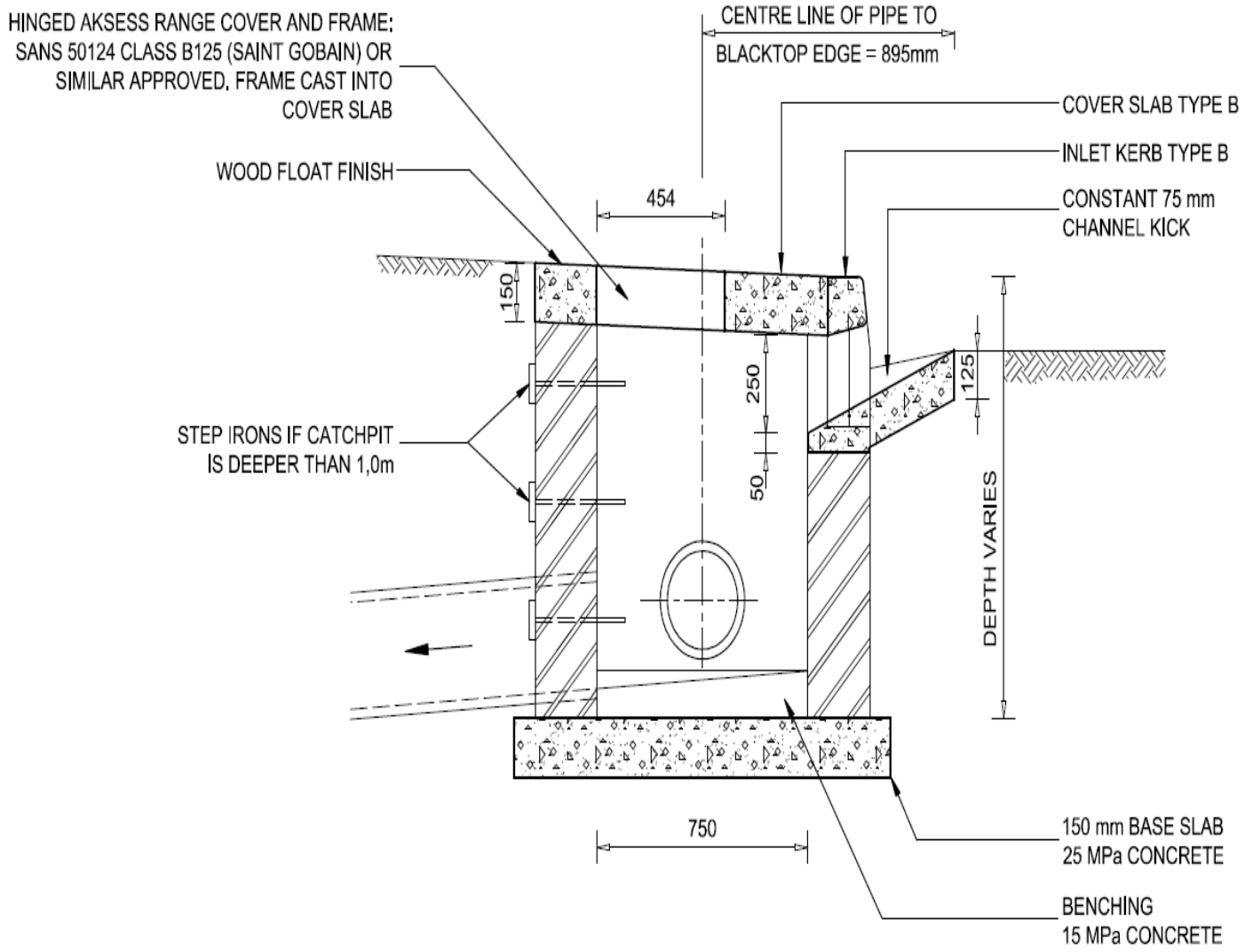


DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
CATCHPIT: TYPE B - PLAN
(1 OF 3)

DRAWING NO.
RST 007

SCALE
1:20



SECTION A - A

NOTES:

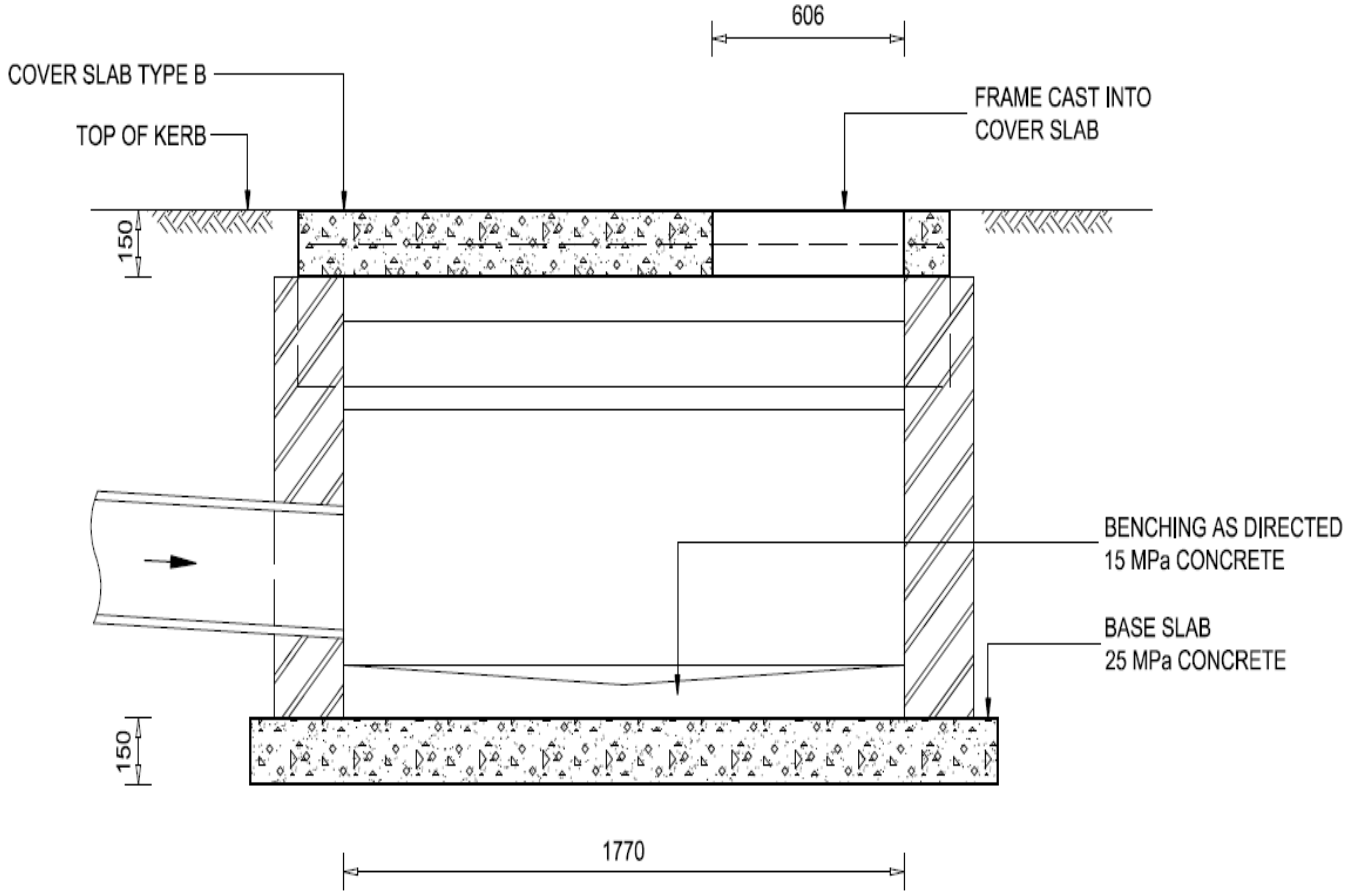
1. STEP IRONS TO BE STAGGERED & PLACED AT 300mm SPACING FOR CATCHPITS DEEPER THAN 1,0.
2. PIPE AND BENCHING VARIES TO SUIT LAYOUT.

DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
CATCHPIT: TYPE B – SECTION A-A
(2 OF 3)

DRAWING NO.
RST 008

SCALE
1:20



SECTION B - B

DRAWING DESCRIPTION
CATCHPIT: TYPE B – SECTION B-B
(3 OF 3)

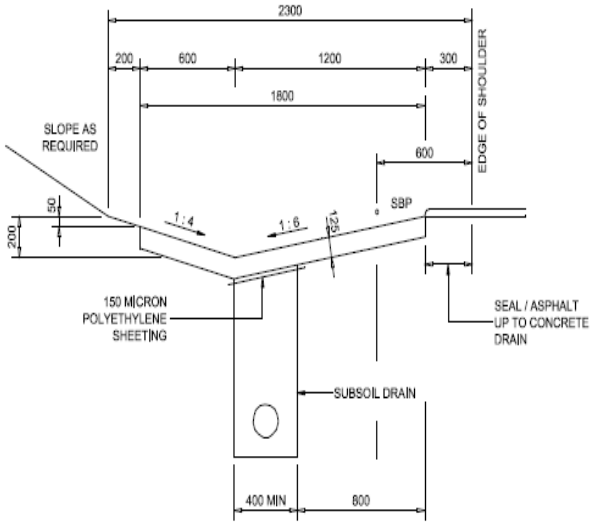
DRAWING NO.
RST 009

SCALE
1:20

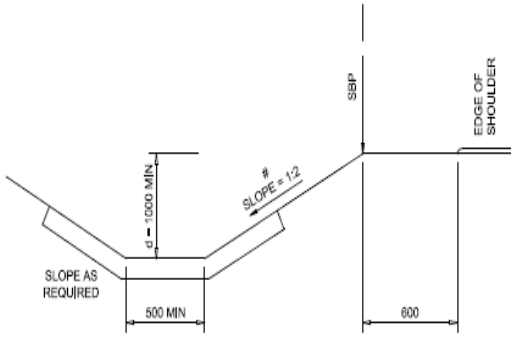
LEGEND

SBP = SHOULDER BREAK POINT

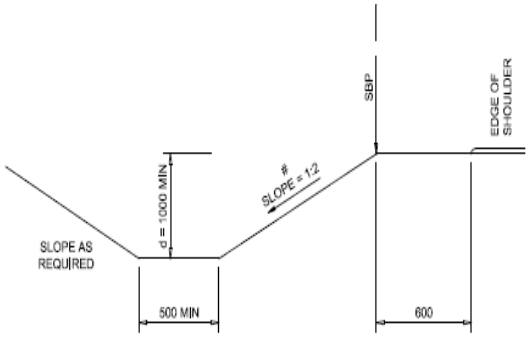
= UNLESS OTHERWISE INDICATED IN THE PROJECT SPECIFICATIONS



CONCRETE SIDE DRAIN



LINED



UNLINED

EARTH SIDE DRAIN

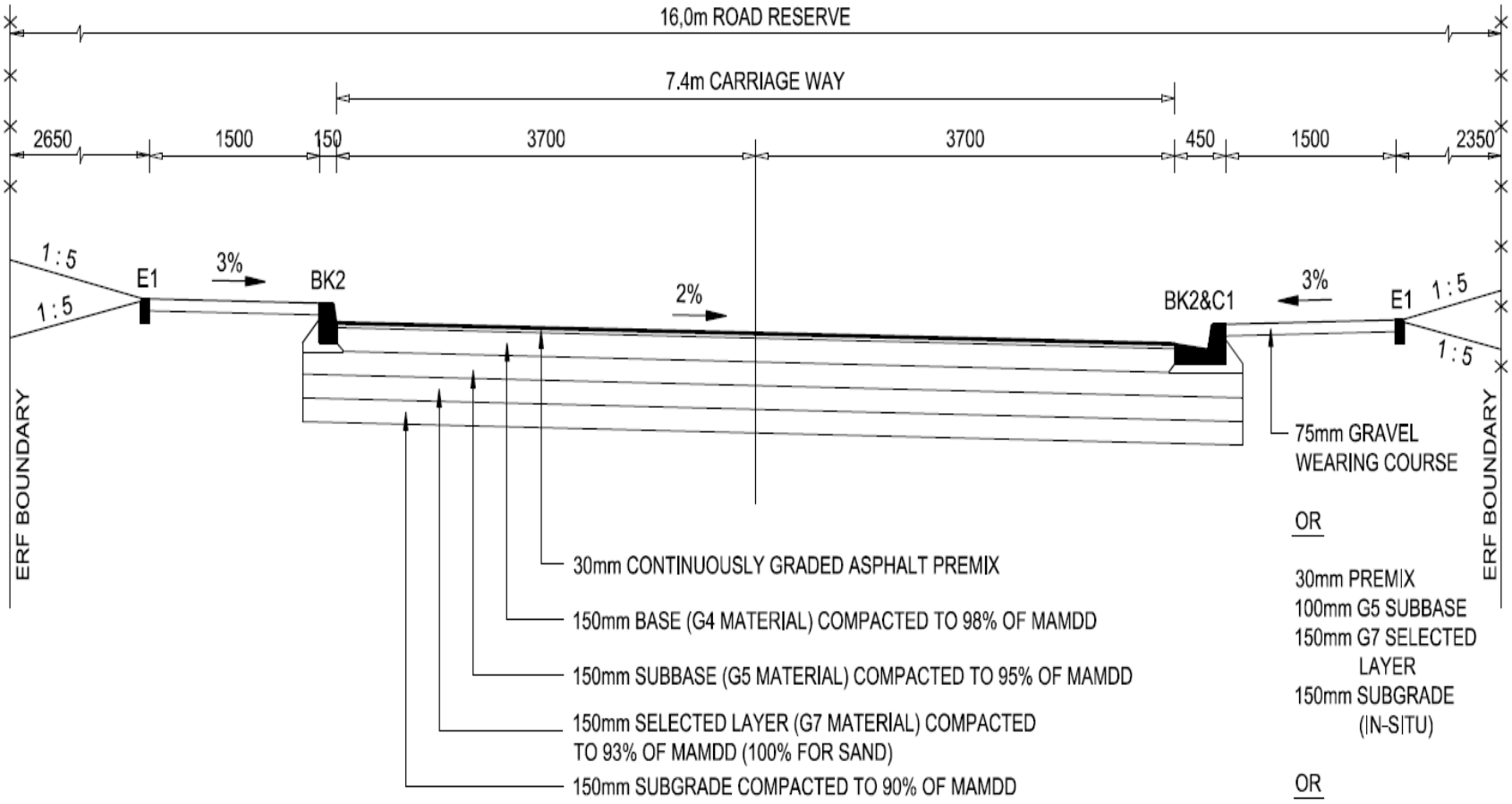
APPLICATION CRITERIA	• SLOPE < 0.5% • SLOPE > 2.0% • WHERE SPECIFIED BY THE ENGINEER	• WHERE SPECIFIED BY THE ENGINEER	• 0.5% < SLOPE < 2.0% • WHERE SPECIFIED BY THE ENGINEER
SUBSOIL DRAIN	COMPULSORY	• WHERE SPECIFIED BY THE ENGINEER SUBJECT TO APPROVAL OF STELLENBOSCH MUNICIPALITY	• WHERE SPECIFIED BY THE ENGINEER SUBJECT TO APPROVAL OF STELLENBOSCH MUNICIPALITY

DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
EARTH SIDE DRAIN (1 OF 2)

DRAWING NO.
RST 010

SCALE
N.T.S



NOTE:

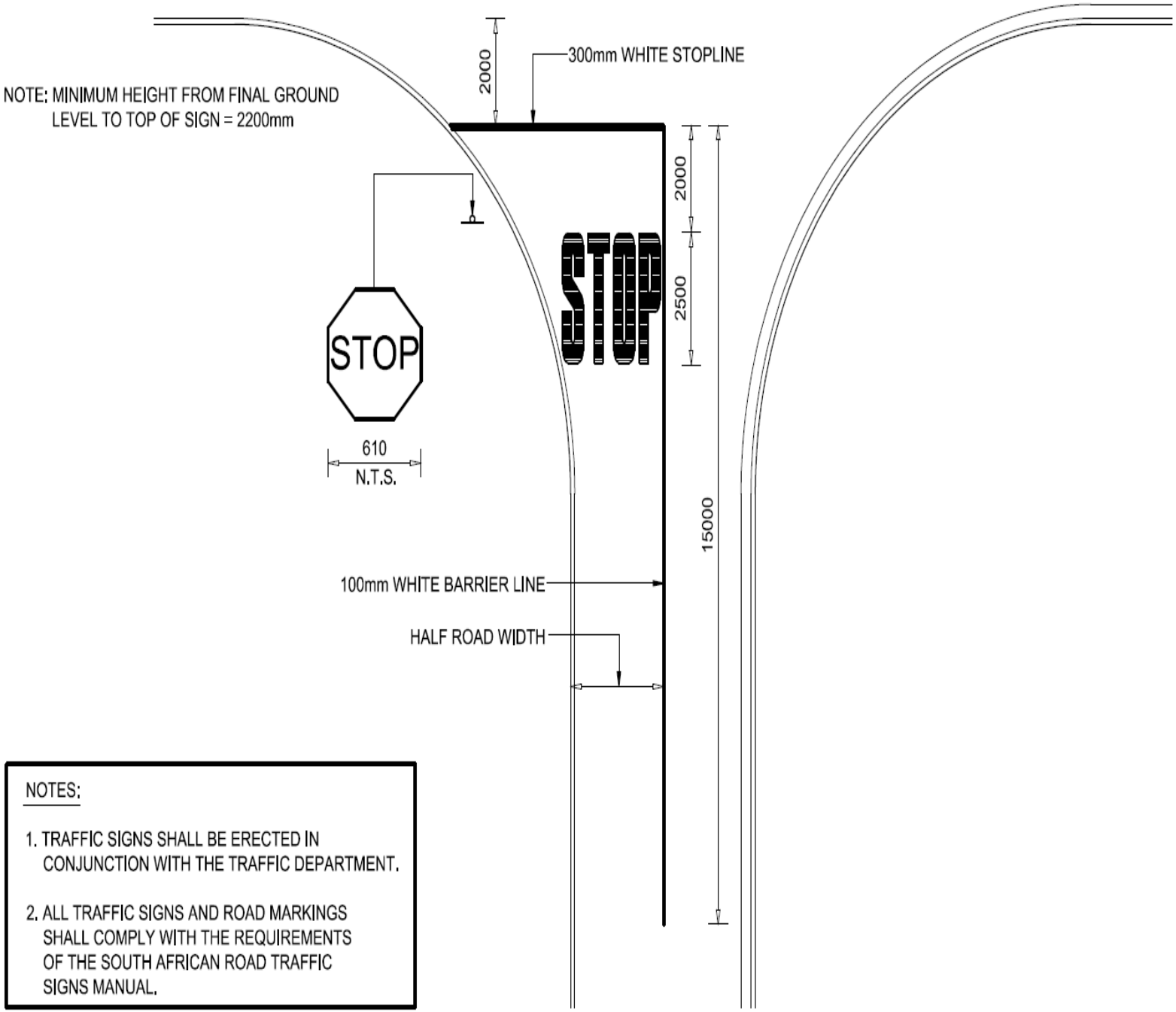
MAMDD: MODIFIED AASHTO MAXIMUM DRY DENSITY

DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
TYPICAL CROSS SECTION OF ROAD

DRAWING NO.
RST 012

SCALE
1:50



NOTES:

1. TRAFFIC SIGNS SHALL BE ERECTED IN CONJUNCTION WITH THE TRAFFIC DEPARTMENT.
2. ALL TRAFFIC SIGNS AND ROAD MARKINGS SHALL COMPLY WITH THE REQUIREMENTS OF THE SOUTH AFRICAN ROAD TRAFFIC SIGNS MANUAL.

DIHLABENG LOCAL MUNICIPALITY

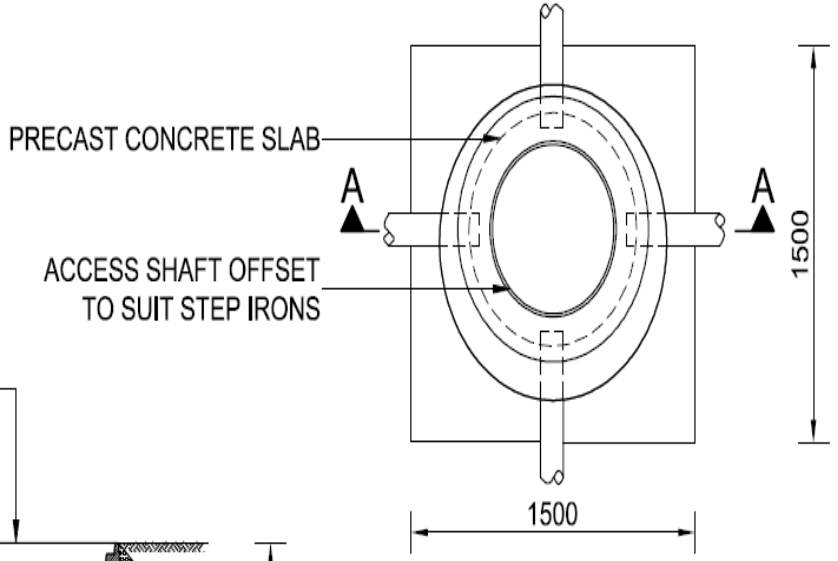
DRAWING DESCRIPTION
TYPICAL STOP INTERSECTION

DRAWING NO.
RST 013

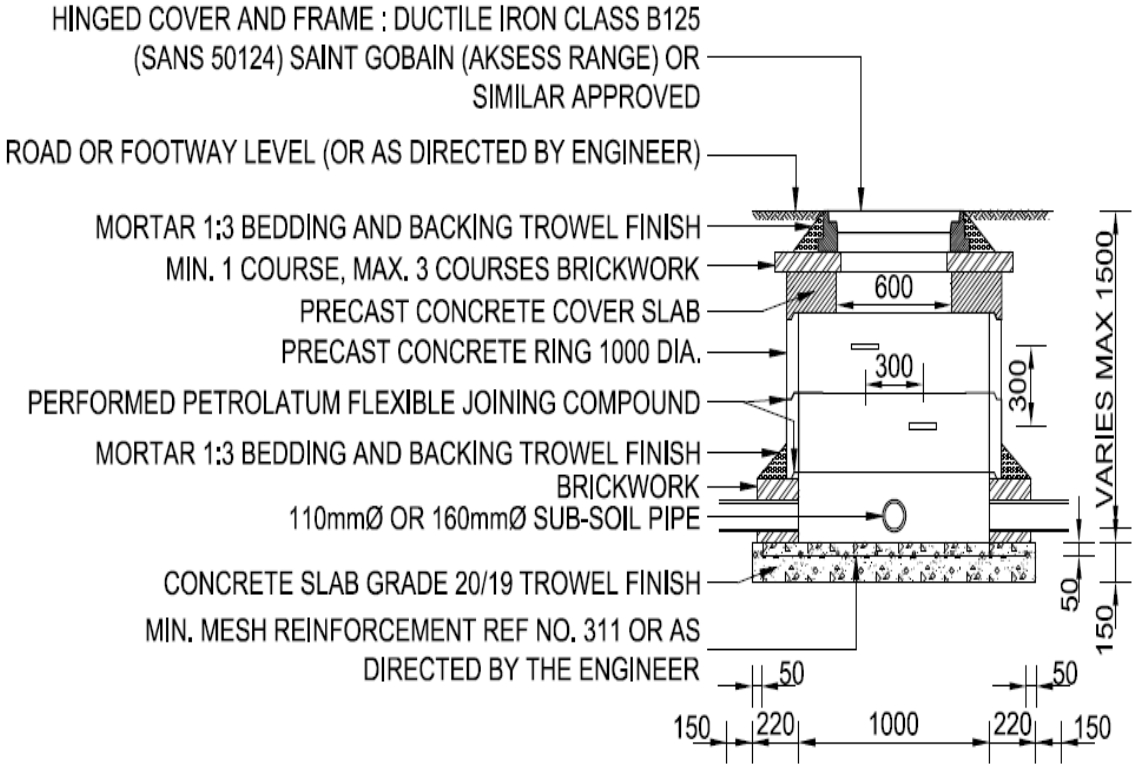
SCALE
1:125

NOTES:

1. BENCHING REQUIRED TO PREVENT STANDING WATER.
2. BRICKWORK - ENGINEERING CLASS NFX
3. MORTAR FOR BRICKWORK TO BE 1:3
4. WHERE DEPTH > 1000 USE STANDARD SW MANHOLE



PLAN

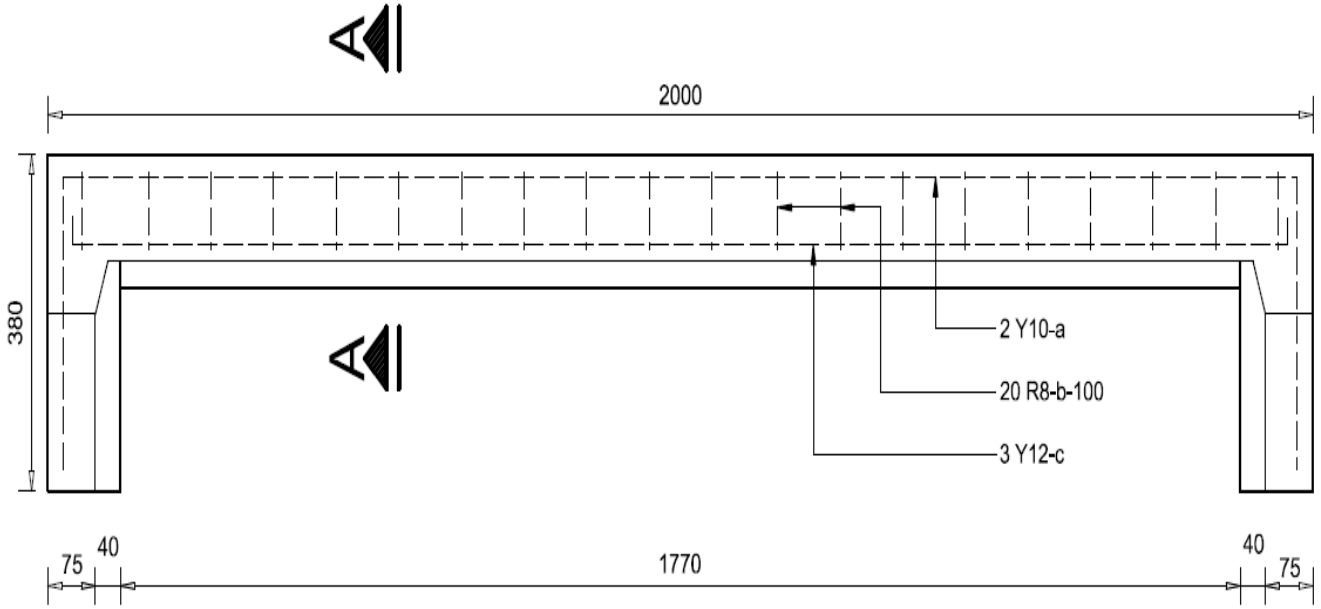


SECTION A - A

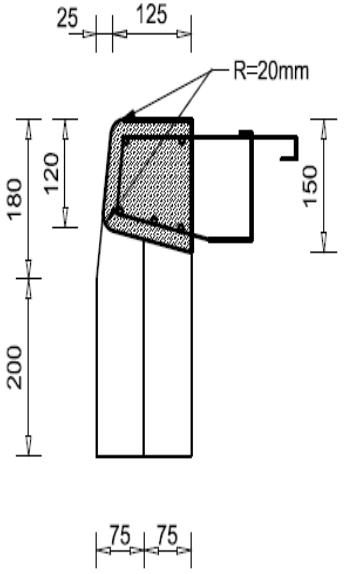
DRAWING DESCRIPTION
MANHOLE FOR SUB
SURFACE DRAIN

DRAWING NO.
RST 014

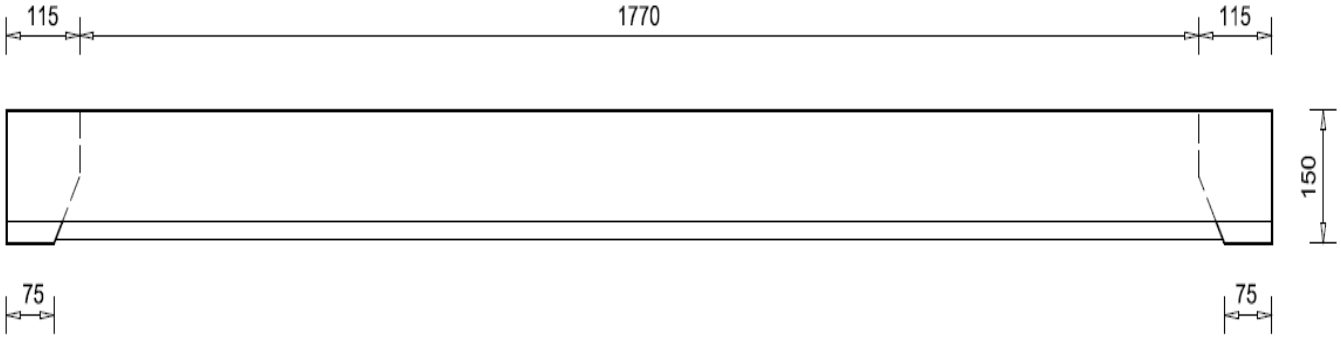
SCALE
N.T.S



FRONT ELEVATION



SECTION A-A



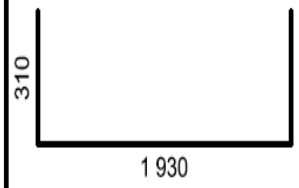
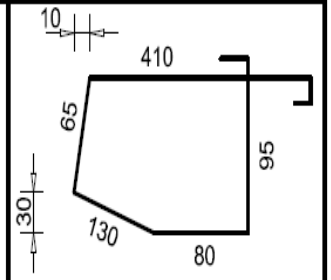
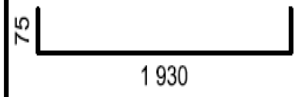
PLAN

DRAWING DESCRIPTION
INLET KERB: TYPE B (1 OF 2)

DRAWING NO.
RST 015

SCALE
1:10

SCHEDULE FOR INLET KERB
-TYPE B-

MARK	TOTAL	Ø	BENDING DETAILS
a	2	Y10	
b	20	R8	
c	3	Y12	

NOTES:

1. CONCRETE 25 MPa
   = 1 BAG CEMENT : 90 LITRE SAND : 110 LITRE STONE (1 : 2,4 : 2,9)
2. COVER TO REINFORCEMENT = 20 mm

DIHLABENG LOCAL MUNICIPALITY

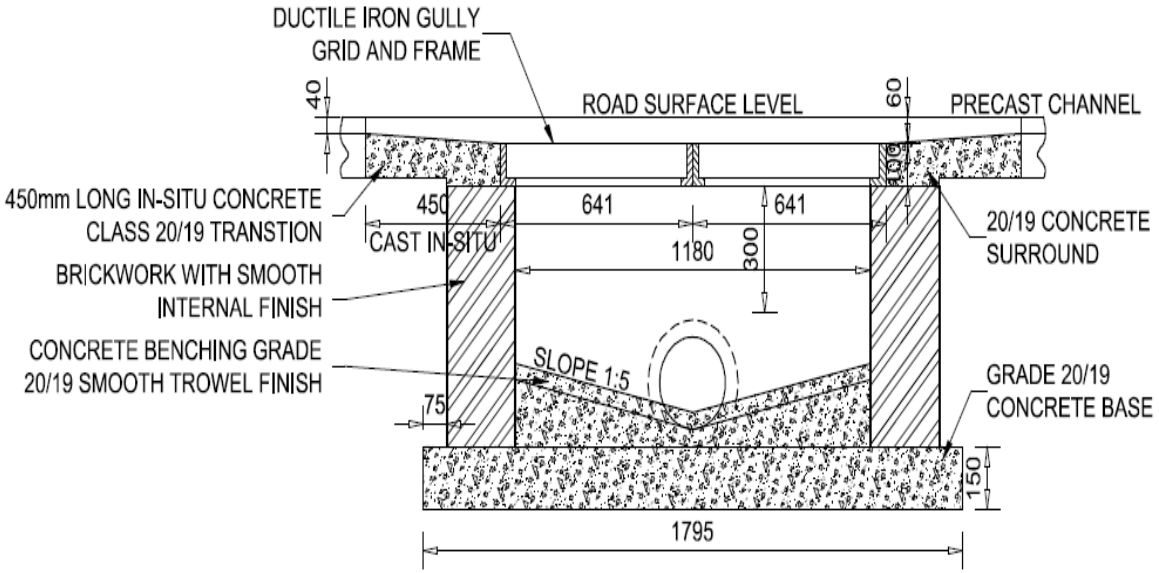
DRAWING DESCRIPTION
INLET KERB: TYPE B (2 OF 2)

DRAWING NO.
RST 016

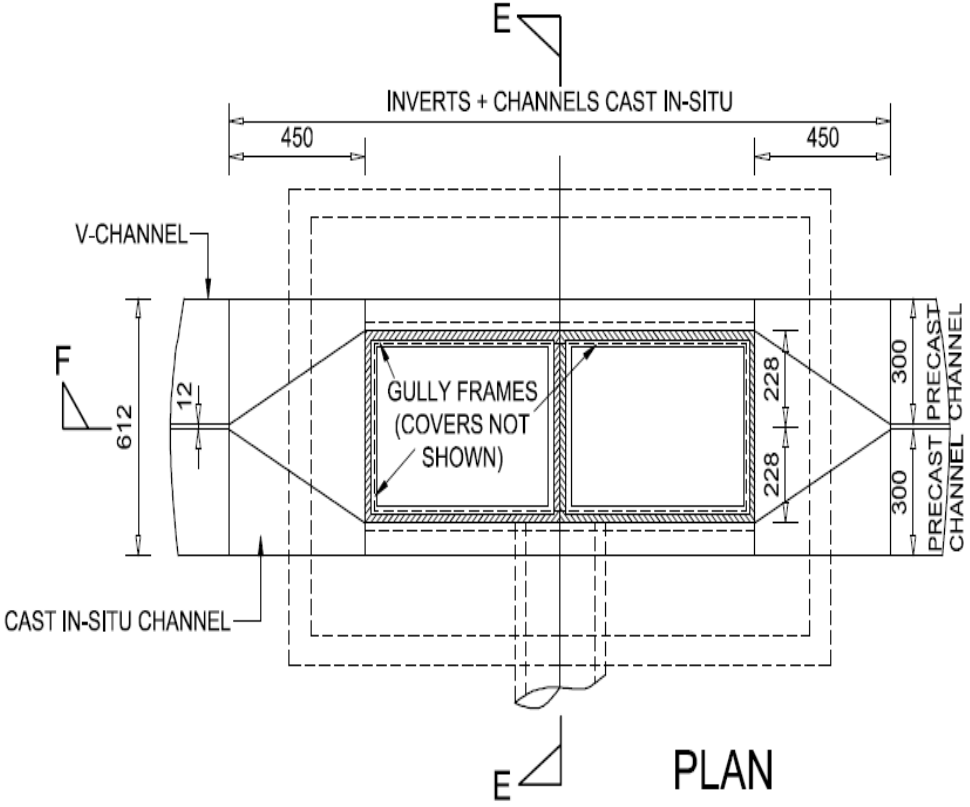
SCALE
1:10

NOTES:

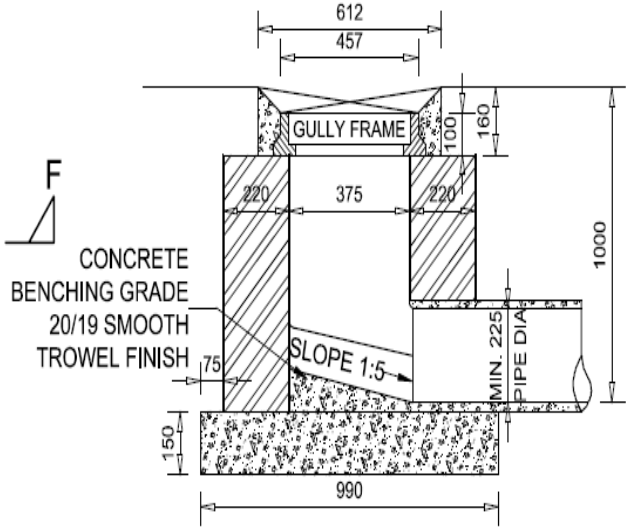
1. HINGED COVERS ARE TO OPEN TOWARDS SIDEWALK AND NOT ROAD.
2. BENCHING NOT REQUIRED IN SANDY AREAS.
3. MAX. DEPTH TO BE 1m.
4. BRICKWORK - TO BE ENGINEERING CLASS NFX TO SANS 227.



SECTION F - F



PLAN

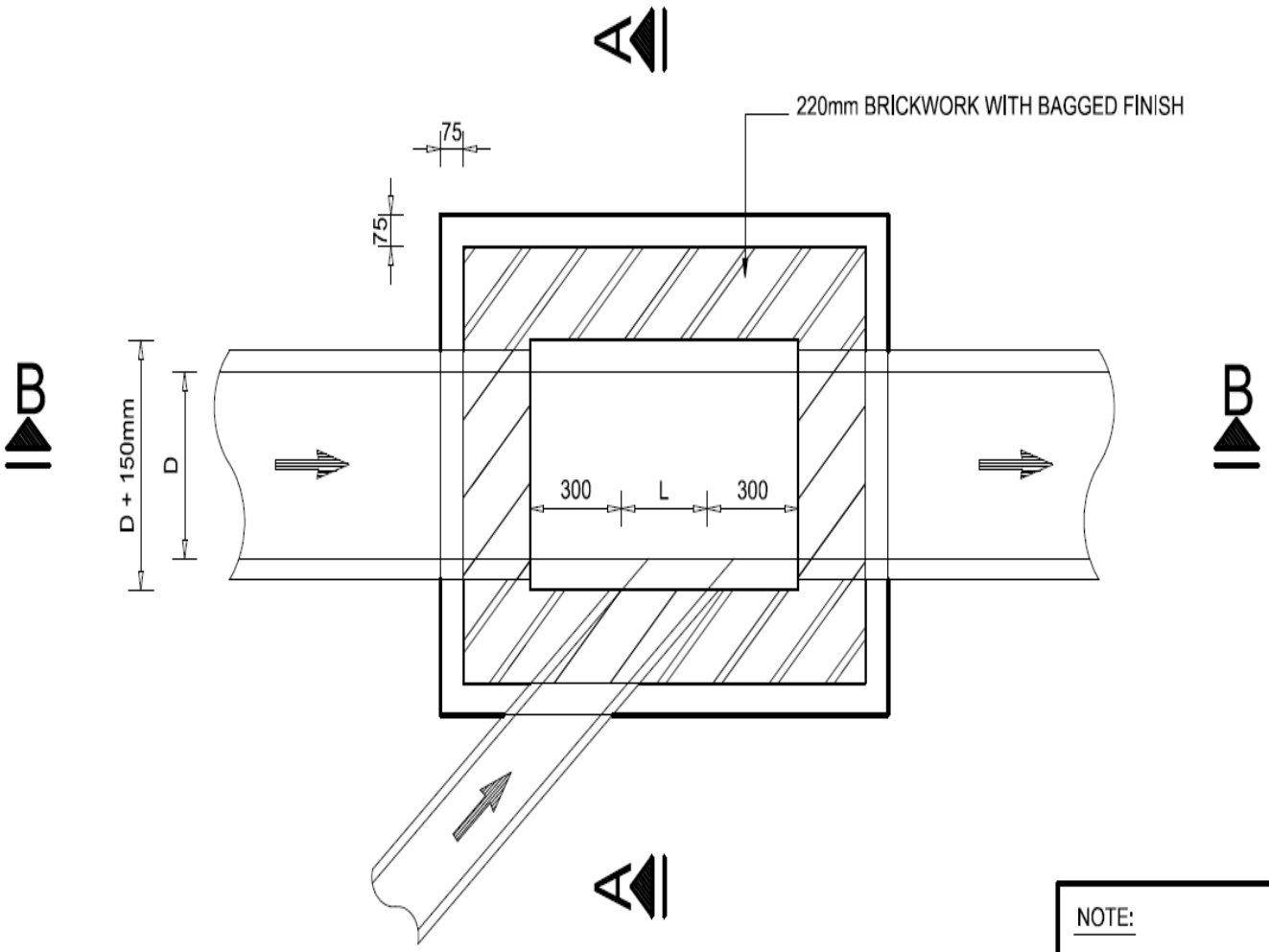


SECTION E - E

DRAWING DESCRIPTION
DOUBLE GULLY GRID CATCHPIT

DRAWING NO.
RST 017

SCALE
N.T.S



PLAN LAYOUT

NOTE:

- TYPICAL PIPE AND BENCHING. VARIES TO SUIT LAYOUT
- D = INSIDE DIAMETER OF PIPE

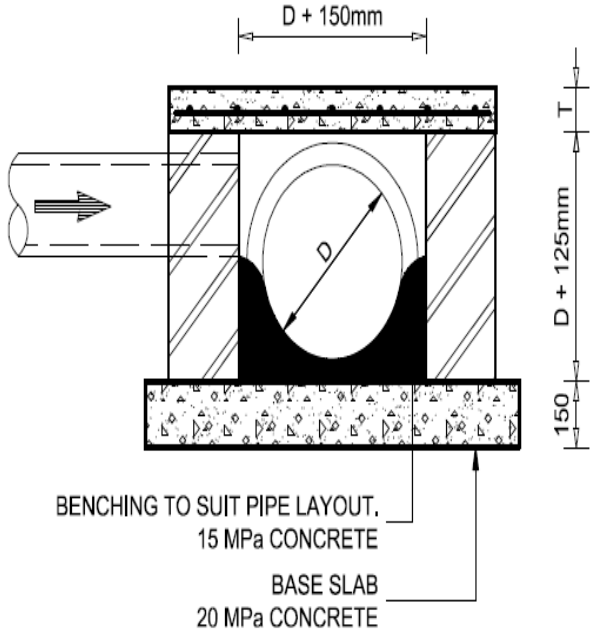
DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
JUNCTION BOX: TYPE 1
PLAN (1 OF 2)

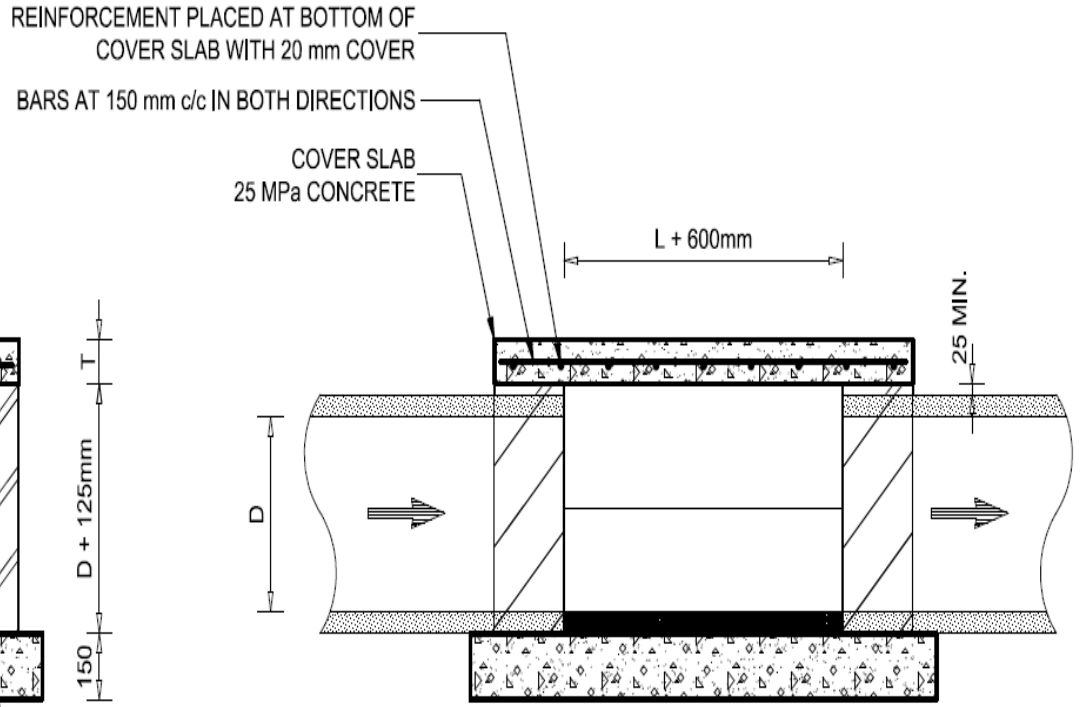
DRAWING NO.
RST 018

SCALE
1:20

REINFORCEMENT		
FOR D + 150	SLAB THICKNESS T	BAR Ø
0,45 TO 0,8	100mm	Y12
0,8 TO 1,5	150mm	Y16
1,5 TO 2,5	200mm	Y25



SECTION A - A

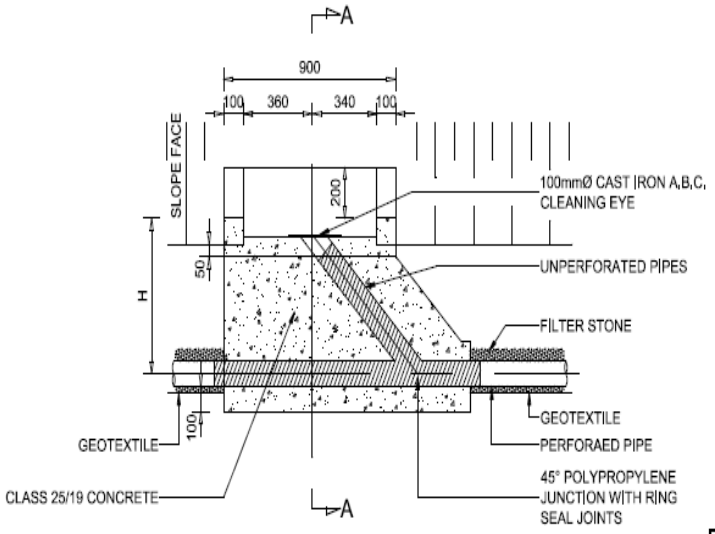


SECTION B - B

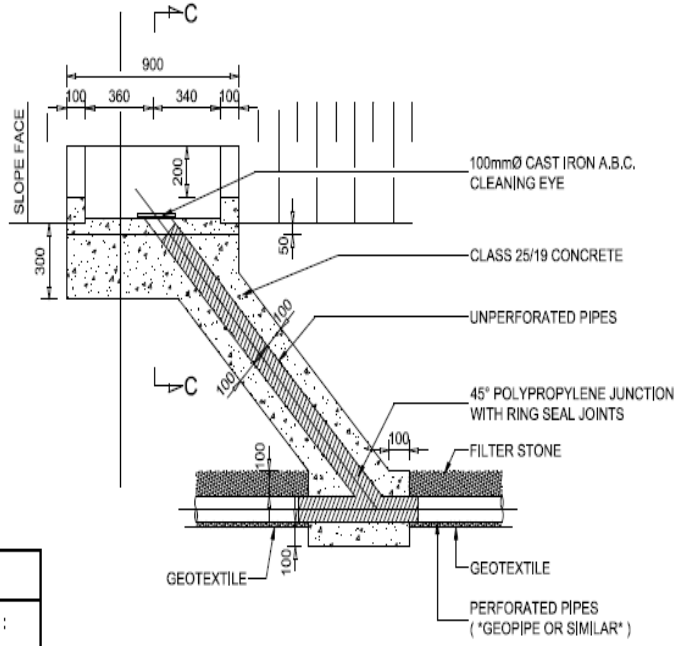
DRAWING DESCRIPTION
JUNCTION BOX: TYPE 1
SECTION (2 OF 2)

DRAWING NO.
RST 019

SCALE
1:20

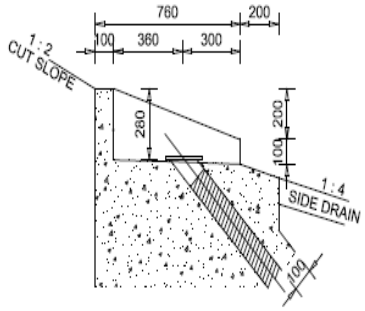


SECTION B - B

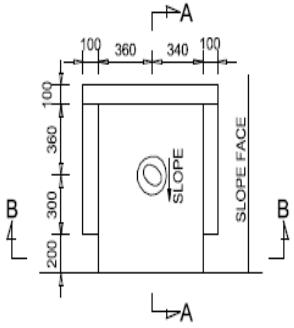


SECTION D - D

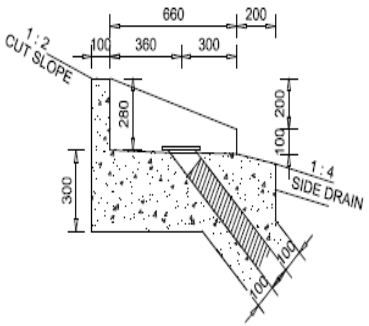
NOTES
1. POSITION OF CLEANING EYES : (a) WHERE NO HAZARD IS CAUSED TO TRAFFIC OR MAINTENANCE IN THE ROAD RESERVE (b) CLEARLY VISIBLE 2. MAXIMUM SPACING : 100m



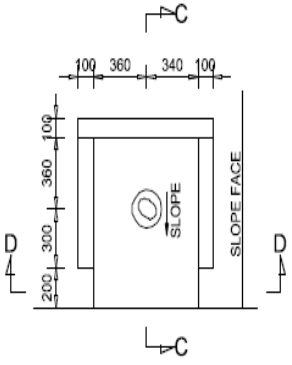
SECTION A - A



PART PLAN



SECTION C - C



PART PLAN

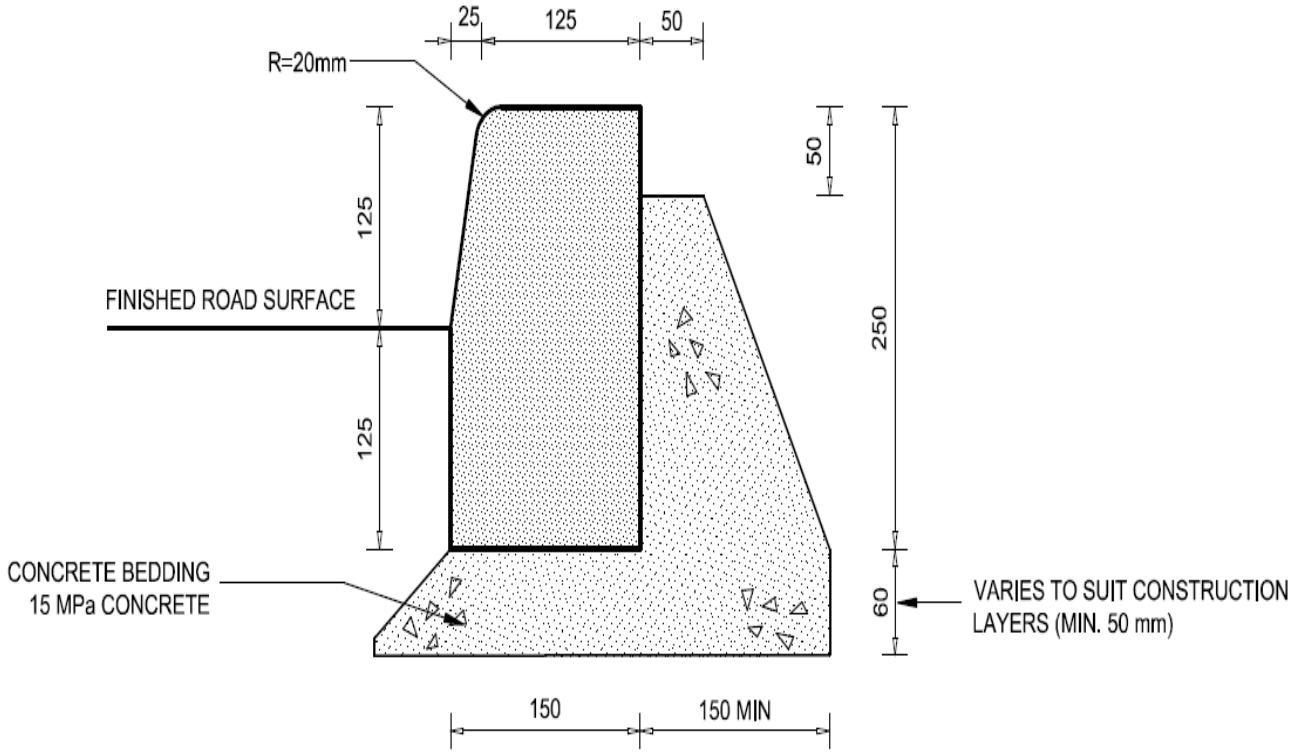
CLEANING EYE TYPE 1 (H ≤ 1000)

CLEANING EYE TYPE 2 (H > 1000)

DRAWING DESCRIPTION
TYPICAL DETAILS OF CLEANING EYES

DRAWING NO.
RST 020

SCALE
N.T.S



DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
BARRIER KERB: TYPE BK2

DRAWING NO.
RST 021

SCALE
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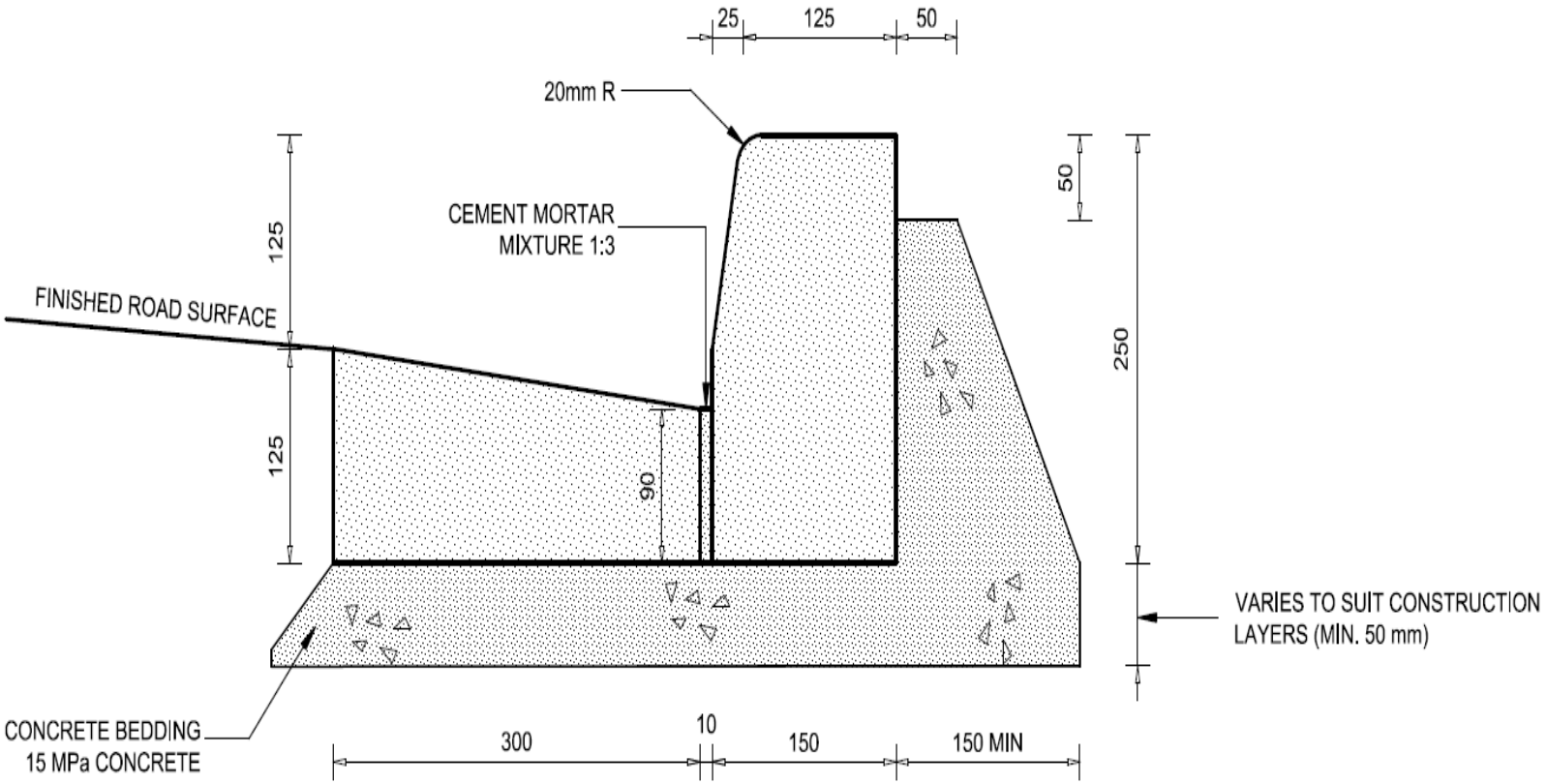

DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
BARRIER KERB:TYPE BK2 & C1

DRAWING NO.
RST 022

SCALE
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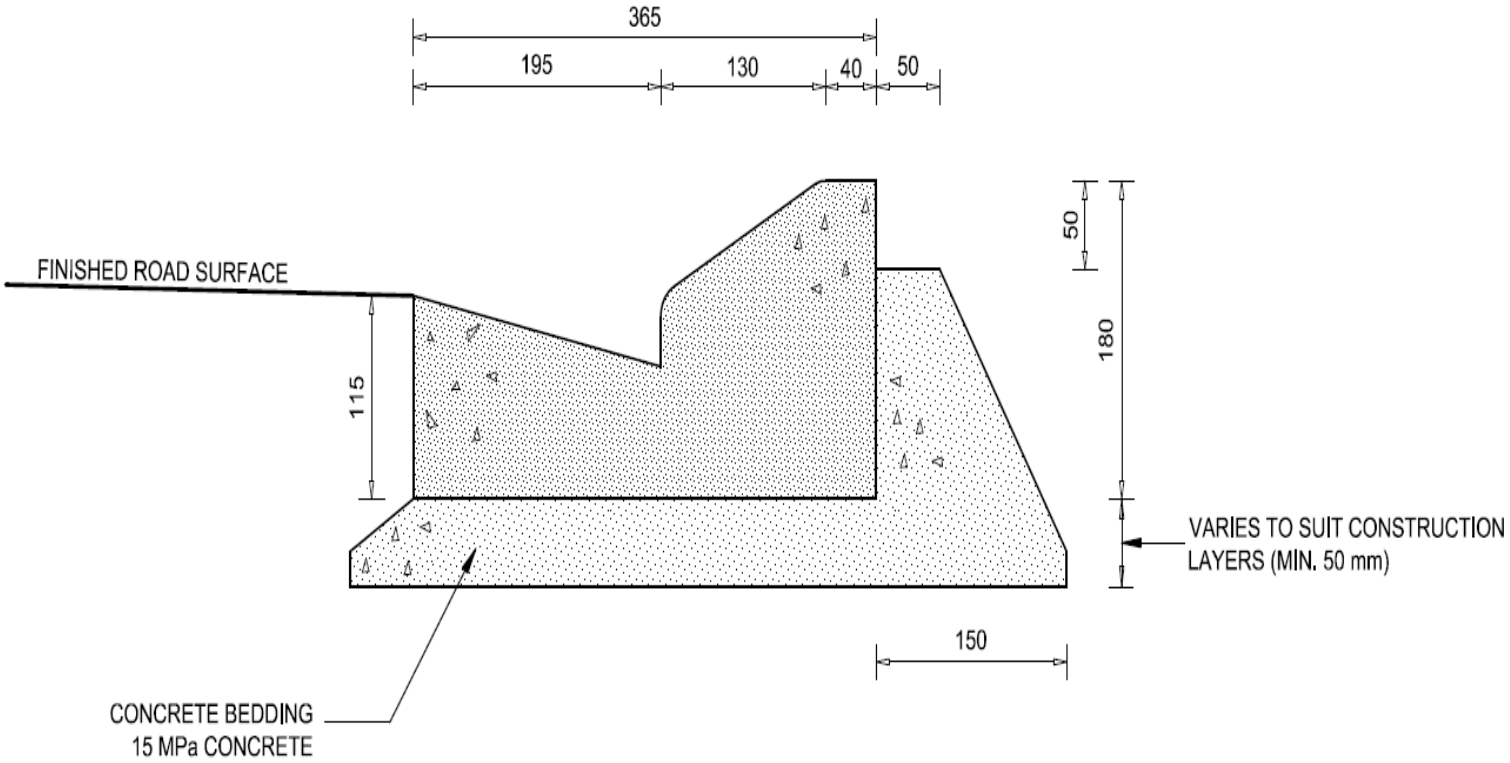

DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
BARRIER KERB:TYPE CK5

DRAWING NO.
RST 023

SCALE
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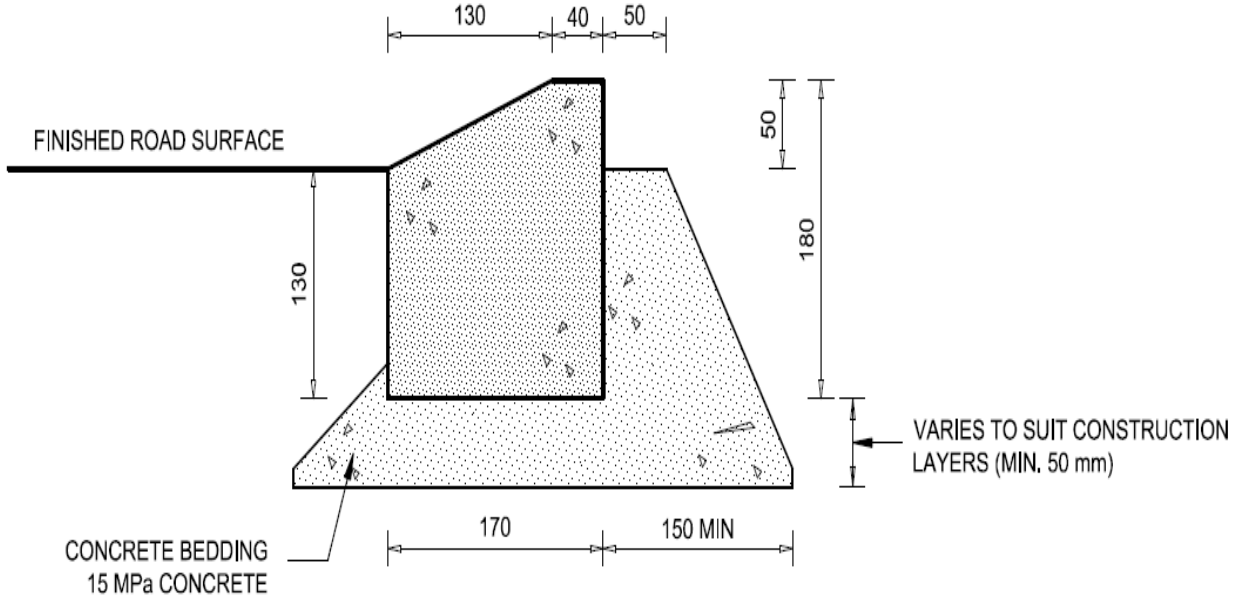

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MOUNTABLE KERB:TYPE MK10

DRAWING NO.
RST 024

SCALE
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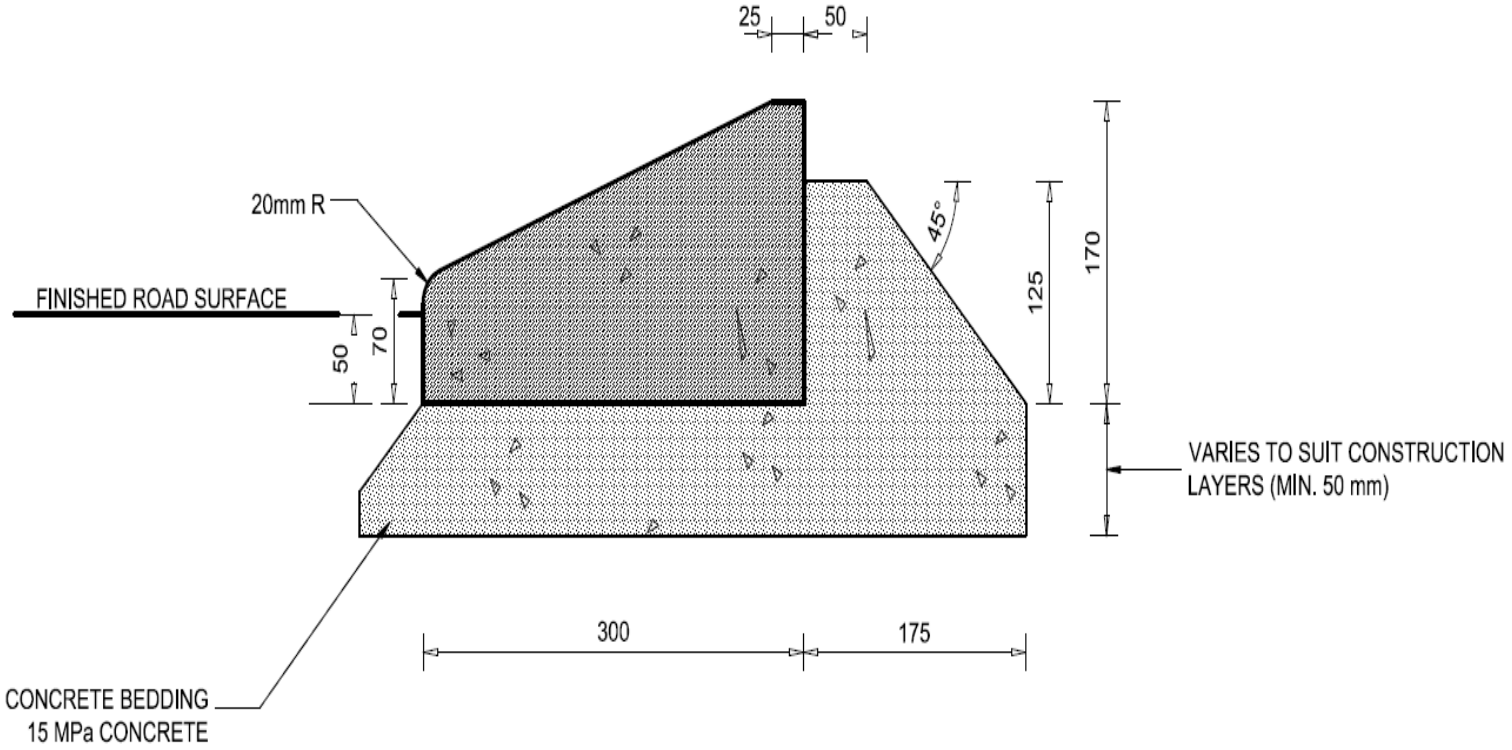

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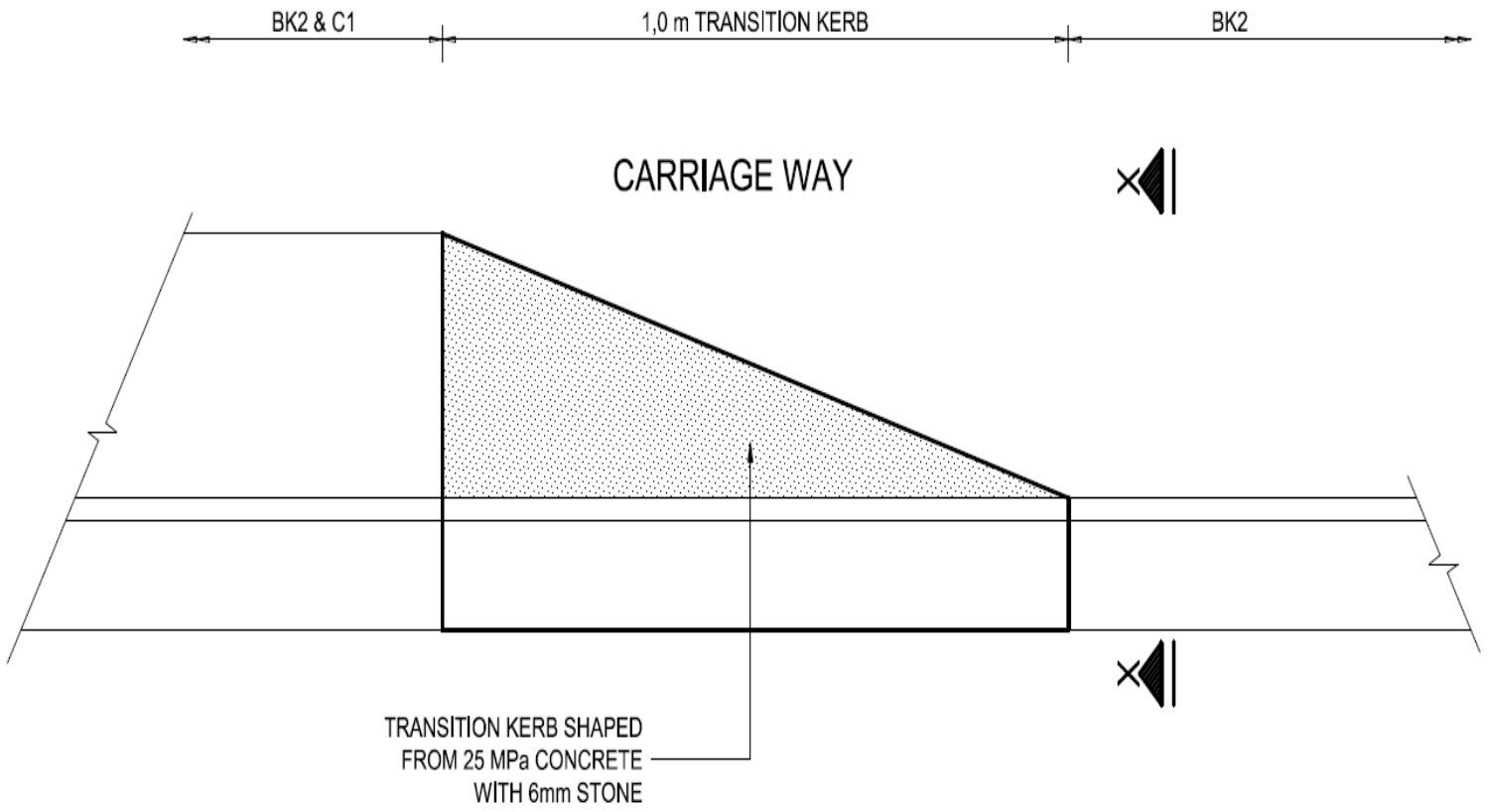
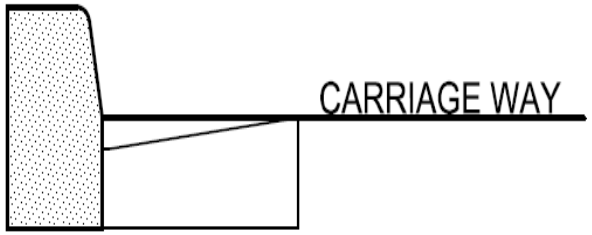
DRAWING NO.
RST 025

SCALE
1:5





SECTION X - X

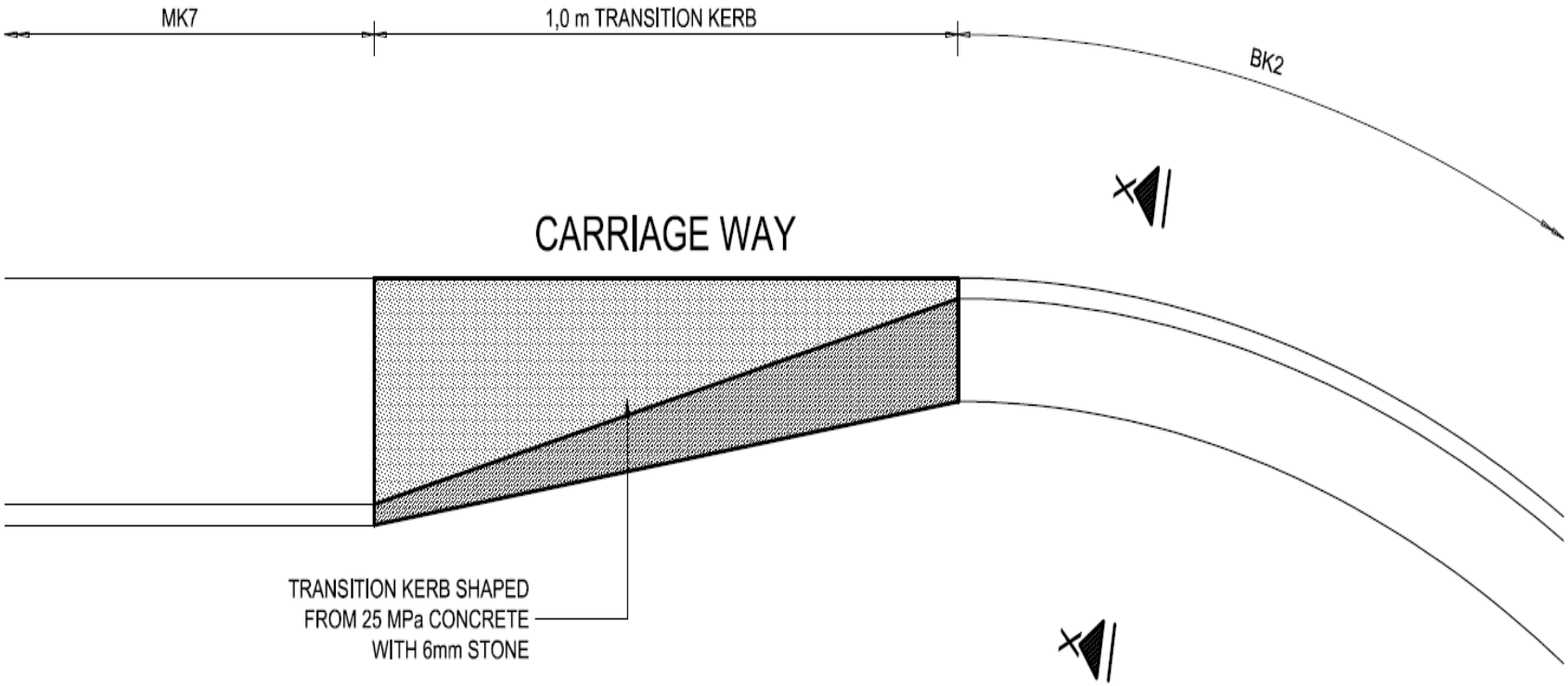
NOTE:
ALL EXPOSED SURFACES TO HAVE
A STEEL FLOAT FINISH

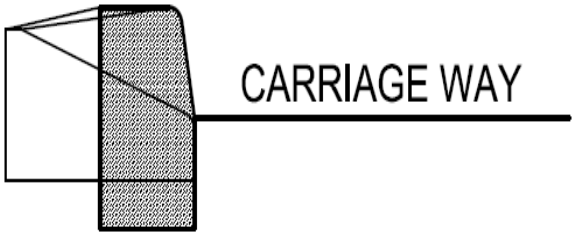
DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
TRANSITION KERB: BK2 & C1

DRAWING NO.
RST 026

SCALE
1:10





SECTION X - X

NOTE:

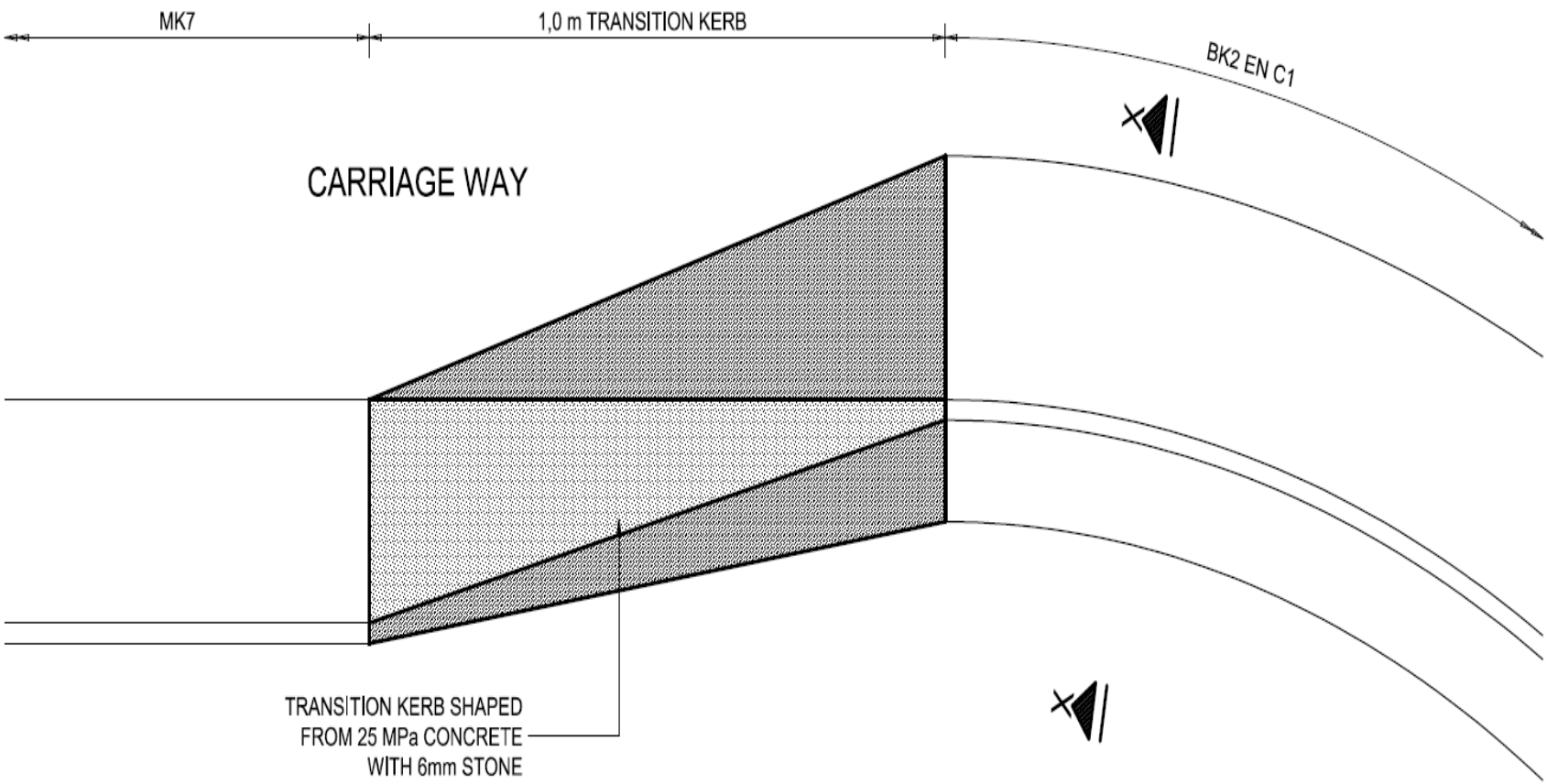
ALL EXPOSED SURFACES TO HAVE A STEEL FLOAT FINISH

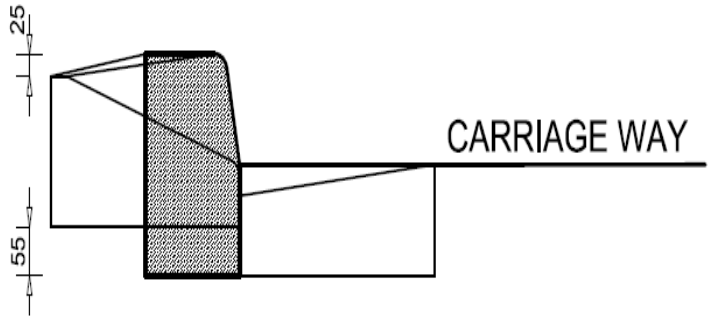
DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
TRANSITION KERB: MK7-BK2

DRAWING NO.
RST 027

SCALE
1:10





SECTION X - X

NOTE:

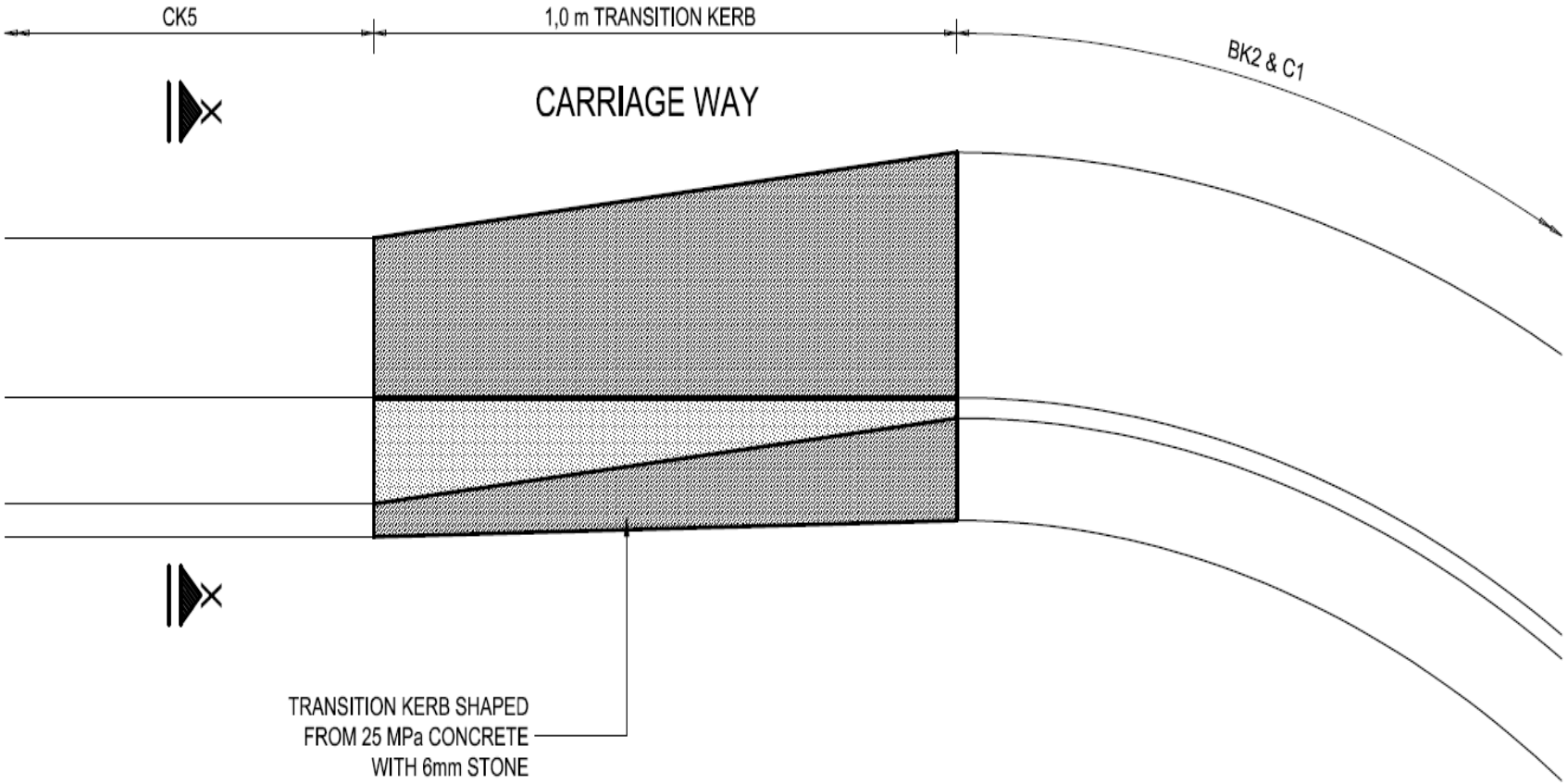
ALL EXPOSED SURFACES TO HAVE A STEEL FLOAT FINISH

DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
TRANSITION KERB:
MK7-BK2 & C1

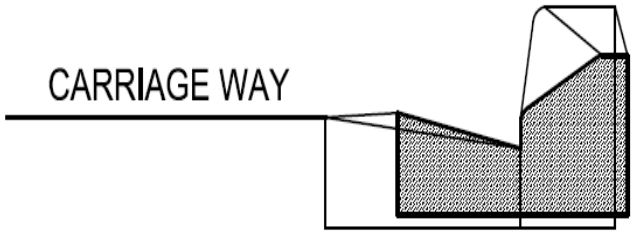
DRAWING NO.
RST 028

SCALE
1:10



NOTE:

ALL EXPOSED SURFACES TO HAVE A STEEL FLOAT FINISH



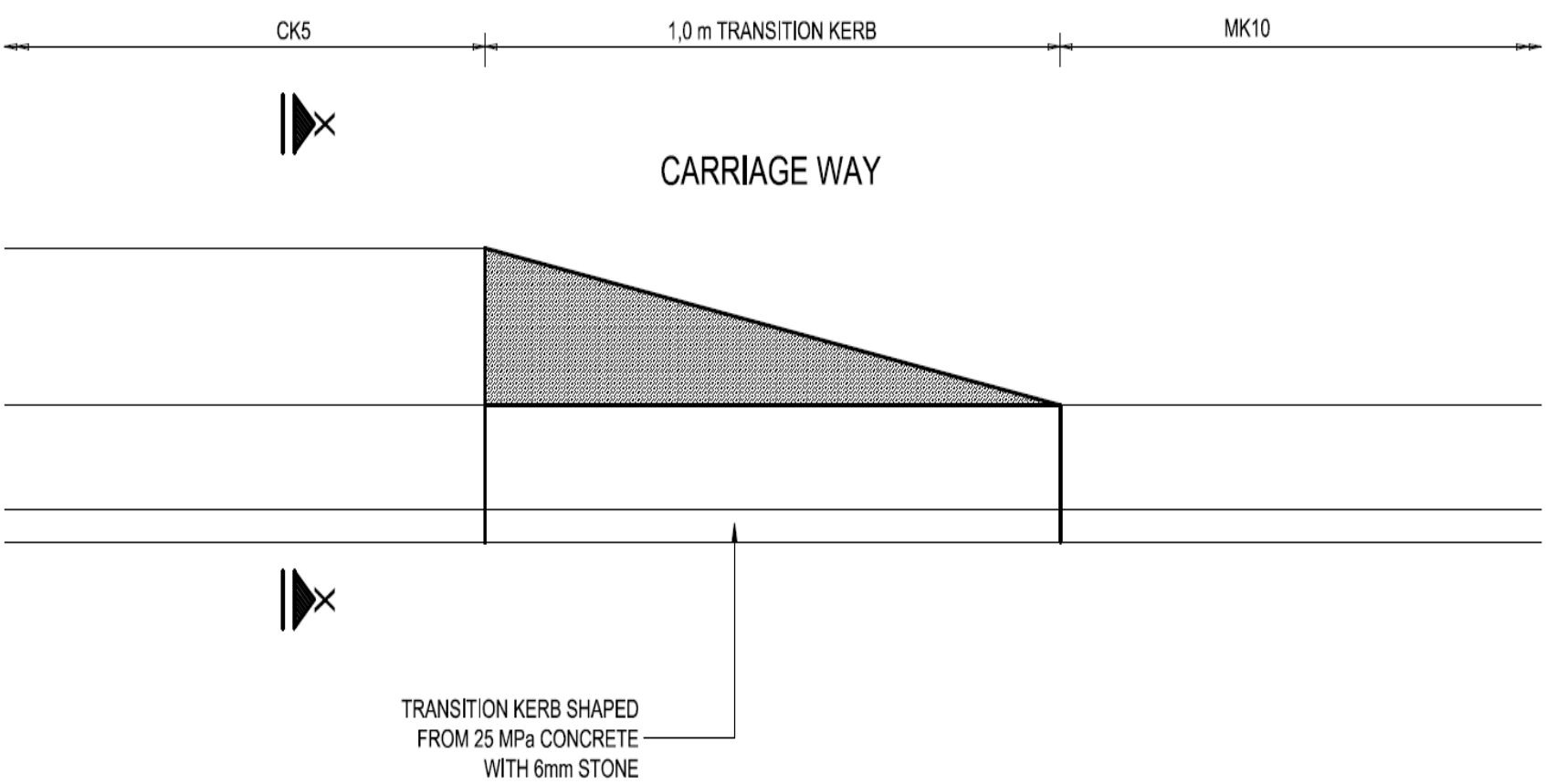
SECTION X - X

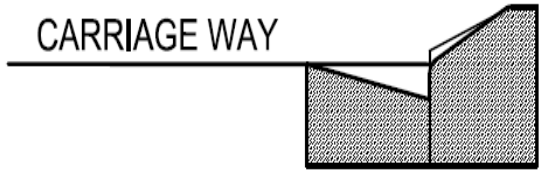
DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
TRANSITION KERB:
CK5-BK2 & C1

DRAWING NO.
RST 030

SCALE
1:10





SECTION X - X

NOTE:

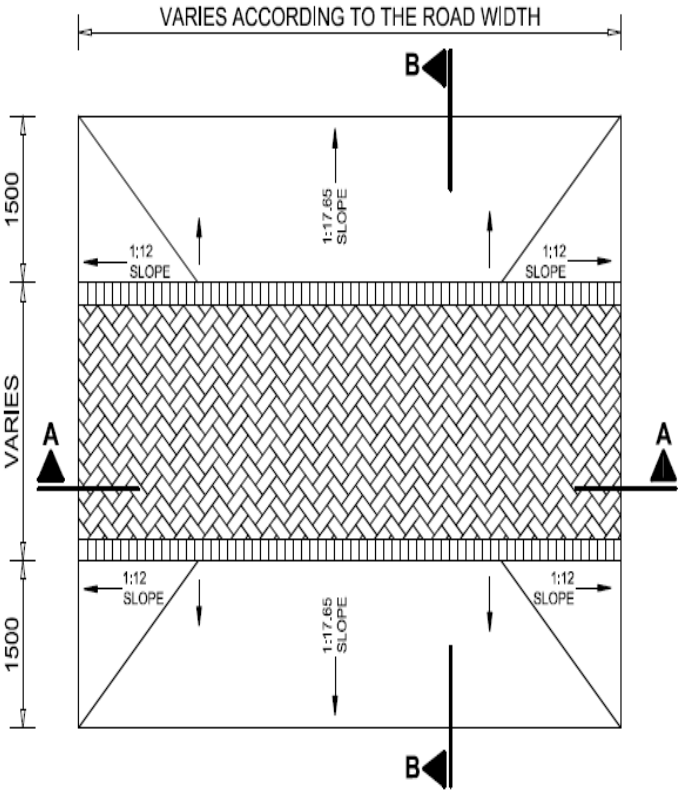
ALL EXPOSED SURFACES TO HAVE A STEEL FLOAT FINISH

DIHLABENG LOCAL MUNICIPALITY

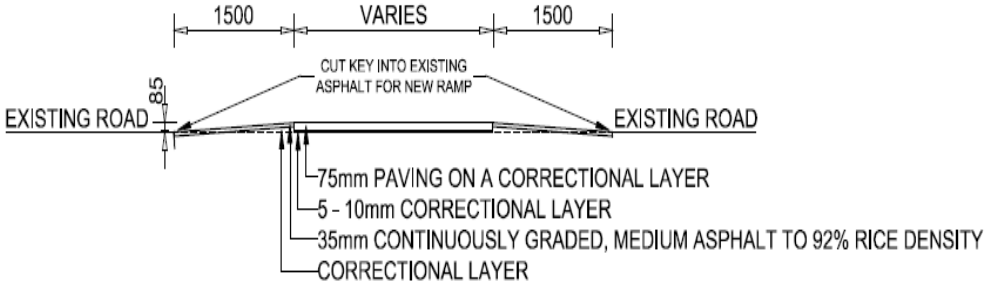
DRAWING DESCRIPTION
TRANSITION KERB:
CK5-MK10

DRAWING NO.
RST 031

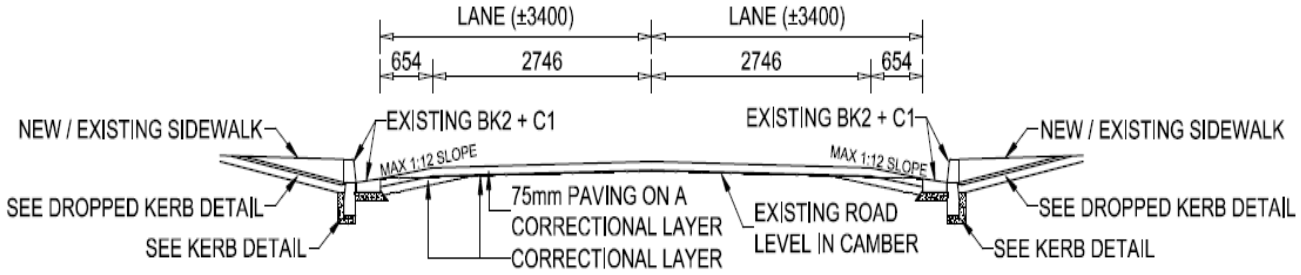
SCALE
1:10



RAISED PEDESTRIAN CROSSING PLAN



LONG SECTION B - B THROUGH CROSSING



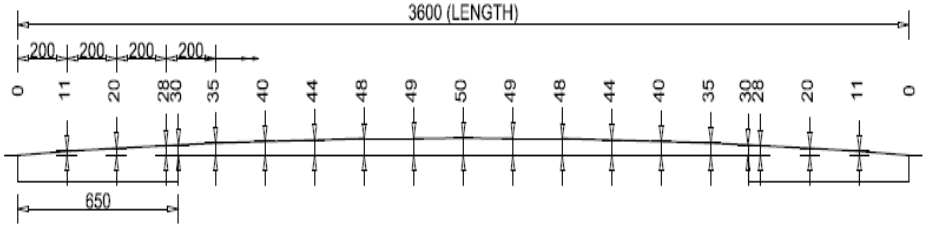
CROSS SECTION A - A THROUGH CROSSING

DIHLABENG LOCAL MUNICIPALITY

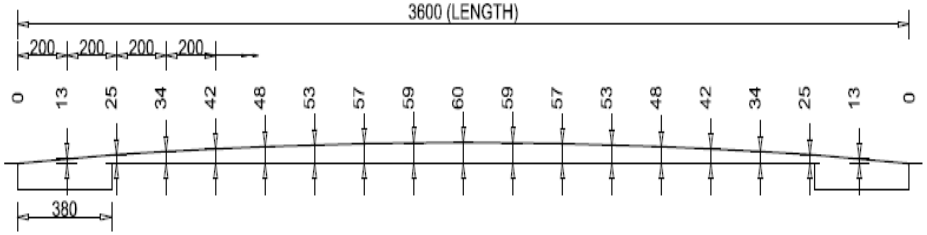
DRAWING DESCRIPTION
TYPICAL RAISED PEDESTRIAN CROSSING

DRAWING NO.
RST 032

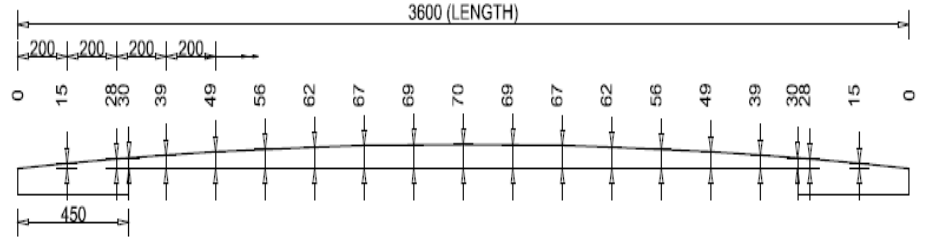
SCALE
N.T.S



50mm SPEED HUMP PROFILE (50km/h)



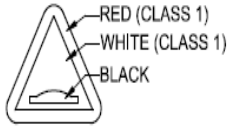
60mm SPEED HUMP PROFILE (40km/h)



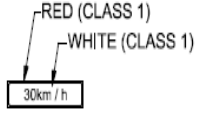
70mm SPEED HUMP PROFILE (30km/h)

NOTES:

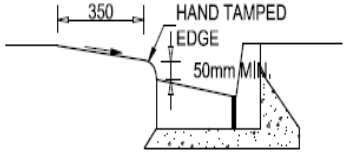
1. SPEED HUMPS SHOULD NOT BE PLACED AT DRIVEWAY ENTRANCES OR STORMWATER GULLIES.
2. W332 AND IN11.1 SHOULD PREFFERABLY BE LOCATED WITHIN 30m AHEAD OF FIRST SPEED HUMP WHEN A SERIES OF SPEED HUMPS ARE USED.
3. SIGN MUST BE ERECTED BEFORE AND ROAD MARKINGS PROVIDED IMMEDIATELY AFTER CONSTRUCTION. ALLOW PREMIX TO COOL BEFORE PAINTING.
4. SPEED HUMP TO BE CONSTRUCTED FROM PREMIX 'TYPE A'. TACK COAT TO BE APPLIED ON ROAD SURFACE BEFORE CONSTRUCTION.



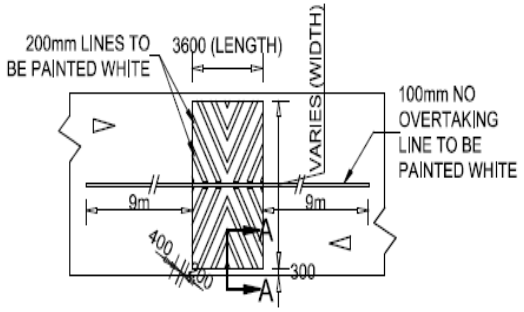
W332
(SPEED HUMPS)



IN11.1
(SUPPLEMENTARY PLATE)



EXISTING KERB AND CHANNEL
CROSS - SECTION THROUGH A - A

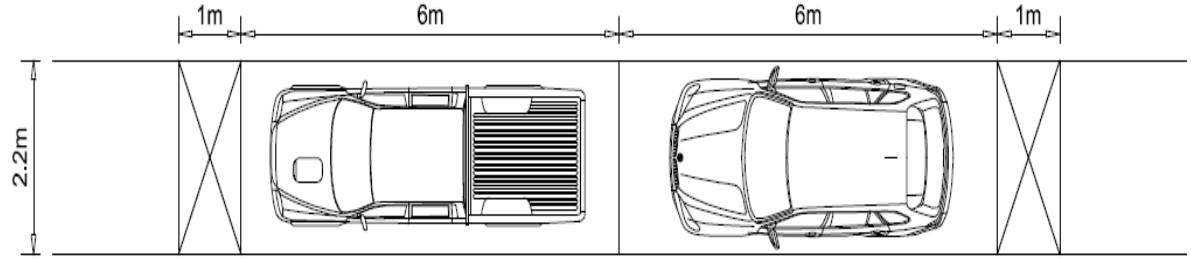


WM10 SPEED HUMP

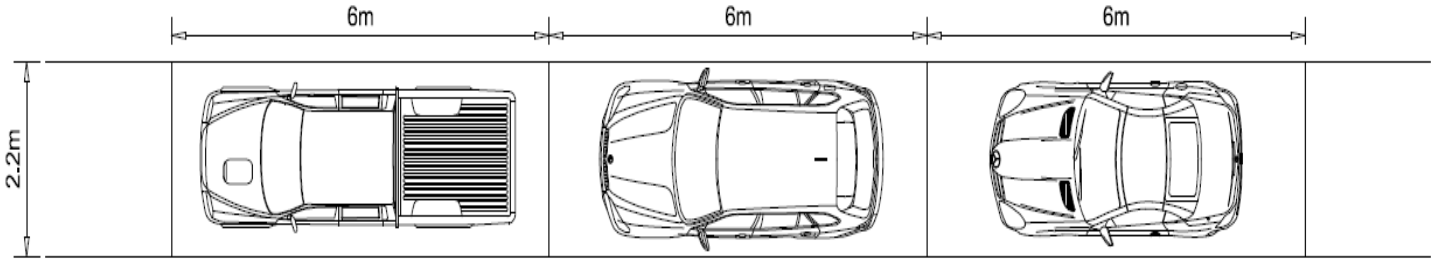
DRAWING DESCRIPTION
TYPICAL SPEED HUMP

DRAWING NO.
RST 033

SCALE
N.T.S



RECOMMENDED LAYOUT ALONG HIGHER ORDER LINKS



ABSOLUTE MINIMUM ALONG LOWER ORDER LINKS

DRAWING DESCRIPTION
PARALLEL PARKING BAYS

DRAWING NO.
RST 034

SCALE
1:100

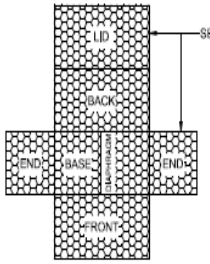


FIGURE 1

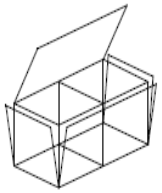


FIGURE 2

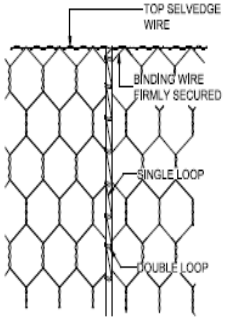


FIGURE 3

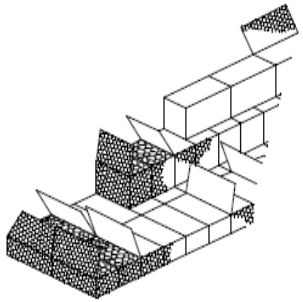


FIGURE 4

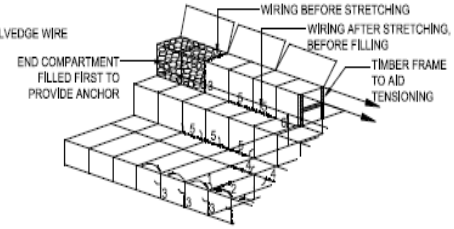


FIGURE 5

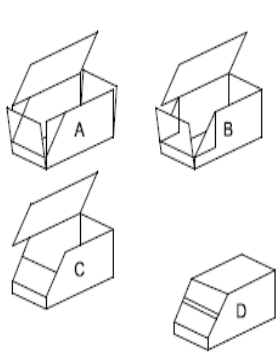


FIGURE 6

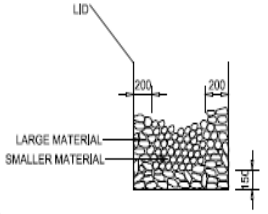


FIGURE 7

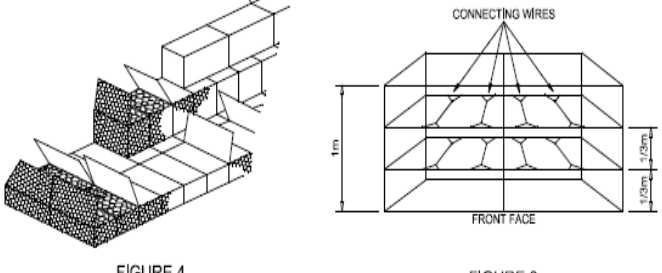


FIGURE 8

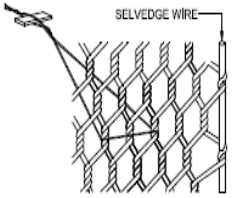


FIGURE 9

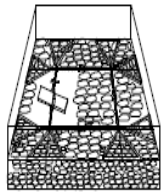


FIGURE 10

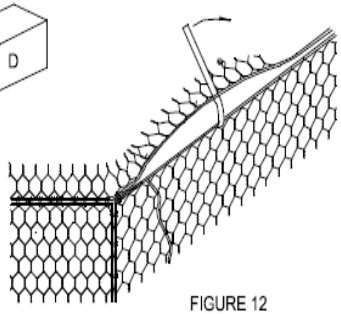


FIGURE 12

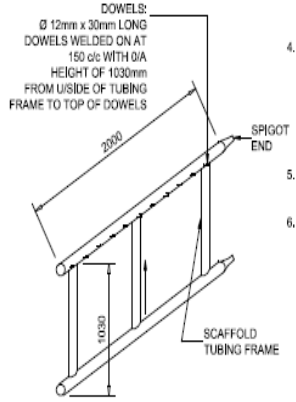


FIGURE 11

ASSEMBLY :

1. UNFOLD EACH GABION ON A HARD FLAT SURFACE, STRECH IT OUT AND STAMP OUT ANY KINKS, MAKE SURE THAT ALL CREASES ARE IN THE CORRECT POSITIONS FOR FORMING THE BOX • ONE AT THE EDGE OF EACH PANEL AND EACH DIAPHRADM (FIGURE 1).

2. FOLD THE SIDE AND END PANELS INTO THE UPRIGHT POSITION TO FORM A RECTANGULAR BOX, JOIN THE TOP CORNERS OF THE BOX TOGETHER WITH THE THICK SELVEDGE WIRE STICKING OUT FROM THE CORNERS OF EACH PANEL. THIS ENSURES THAT THE TOPS OF ALL FOUR SIDES OF THE BOX ARE LEVEL (FIGURE 2).

3. SECURING THE BINDING WIRE AROUND THE TOP SELVEDGES OF THE PANELS TO BE JOINED TOGETHER, LACE THE WIRE AROUND THE TWO EDGE SELVEDGES WITH SINGLE LOOPS IN TURN AT 100mm INTERVALS (FIGURE 3). FINALLY, FASTEN THE WIRE SECURELY AT THE BOTTOM CORNER SELVEDGES AND POKE THE LOOSE END INSIDE THE GABION BOX. THEN LIFT THE DIAPHRAGMS INTO THE VERTICAL POSITION AND WIRE THEM UP TO THE SIDE PANELS IN EXACTLY THE SAME WAY. THE TIGHTNESS OF THE MESH AND WIRING IS ESSENTIAL AT ALL TIMES.

4. IT IS GOOD CONSTRUCTION PRACTICE TO LACE SMALL GROUPS OF GABION BOXES TOGETHER AS COMPLETE SECTIONS BEFORE JOINING THEM TO THE REST OF THE STRUCTURE, USING EXACTLY THE SAME METHOD AS FOR ASSEMBLING SINGLE BOXES. PLACE THEM FRONT TO FRONT AND BACK TO BACK, SO THAT PAIRS OF FACING LIDS CAN LATER BE WIRED DOWN SIMULTANEDUSLY (FIGURE 4).

FORMING THE STRUCTURE :

1. THE SURFACE ON WHICH THE GABION BOXES ARE TO BE CONSTRUCTED, SHALL BE LEVELLED TO THE SPECIFIED DEPTH SO AS TO PRESENT AN EVEN SURFACE, CAVITIES BETWEEN HARD PROTRUSIONS SHALL BE FILLED WITH MATERIAL SIMILAR TO THAT BEING USED FOR FILLING THE GABIONS.

2. 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 SECURELY LACED TO COMPLETED WORK AY ALL DIAPHRAGM POINTS (FIGURE 5), OR ANCHORED BY RODS DRIVEN INTO THE GROUND AT THESE POSITIONS. THE RODS MUST BE SECURED AND REACH AT LEAST TO THE TOP OF THE GABION BOX.

3. STRECH THE OPPOSITE SIDE OF THE BOX OR SECTION BY INSERTING BARS INTO THE BOTTOM CORNERS AND LEVERING THEM FORWARDS BY MEANS OF A WIRE STRAINER OR WINCH. THE TOP AND BOTTOM ARE THEN KEPT STRETCHED IN THIS WAY UNTIL THE GABION HAS BEEN FILLED. WHILE THE GABION IS BEING STRETCHED, ENSURE THAT THE OPPOSITE WIRING OR ANCHORING HAS BEEN PROPERLY CARRIED OUT AND IS NOT PULLING APART OR COLLAPSING (FIGURE 5). THE NEXT STEP IS TO WIRE ALL THE OTHER SIDES AND ENDS OF THE STRETCHED SECTION TO ADJOINING ALREADY FILLED GABIONS (FIGURE 5). THE STRONG INTER-CONNECTION OF ALL UNITS IN A GABION STRUCTURE IS AN IMPORTANT FEATURE OF THE TECHNIQUE AND IT IS THEREFORE ESSENTIAL THAT THE WIRING IS SECURE.

4. WHERE GABION STRUCTURES WITH NON-RECTANGULAR SHAPES ARE SPECIFIED, MODIFICATIONS TO THE BOXES ARE REQUIRED. GABION BOXES ARE FLEXIBLE ENOUGH TO CONFORM TO BENDS DOWN TO A RADIUS OF 25m WITHOUT WIRING. FIRST WIRE A NUMBER OF BOXES TOGETHER AND BEND THEM UP TO THE CURVE SET OUT PREVIOUSLY, HOLDING THEM IN POSITION DURING FILLING. OTHER SHAPES, BEVELS AND MITRES, SHOULD BE FORMED BY CUTTING AND FOLDING THE PANELS TO THE REQUIRED ANGLES AND SIZES (FIGURE 6).

ROCK FILLING :

1. FILLING SHOULD BE CARRIED OUT ONLY WHILST GABION BOXES ARE UNDER TENSION.

2. FILLING MATERIAL SHOULD BE HARD DURABLE STONE NOT LARGER THAN 250mm AND NOT SMALLER THAN THE SIZE OF THE MASH. IDEALLY THE STONE SHOULD BE JUST SLIGHTLY LARGER THAN THE MESH SIZE IN ORDER TO ALLOW FLEXIBILITY IN THE STRUCTURE BUT AT THE SAME TIME FILLS THE GABOIN COMPARTMENTS WITH THE MINIMUM OF VOIDS AND THE MAXIMUM MASS.

3. IN AREAS WHERE LARGE ENOUGH FILL IS DIFFICULT TO OBTAIN, THE COMPARTMENT IS LINED WITH LARGE MATERIAL AND THE INTERIOR FILLED WITH SMALLER, THE SMALL MATERIAL CAN BE 5% TO 7% OF THE FILL (FIGURE 7). CARE SHALL BE TAKEN IN PACKING THE VISIBLE FACES OF GABION BOXES WHERE ONLY SELECTED STONE OF THE SPECIFIED SIZE SHALL BE USED SO AS TO OBTAIN AN EVEN FACED FINISH.

4. TO ADOID BULGING ONTHE VISIBLE SIDE OF THE STRUCTURE, FILL ALL THE OUTSIDE BOXES IN STAGES (1.0m HIGH BOXES IN THREE LEVELS AND 0.5m HIGH BOXES IN TWO LEVELS) WITH HORIZONTAL BRACING IN BETWEEN (FIGURE 8). FIX THE BRACING WIRES IN THE GABION BOX DIRECTLY ABOVE THE STONE LEVEL MAKING SURE THE WIRE PASSES ROUND AT LEAST TWO MESH WIDTHS AND "SPANISH" WINDLASS THE BRACING WIRES TO KEEP THE FACE EVEN AND FREE FROM BULGING (FIGURE 9). BRACING IN BOTH DIRECTIONS SHOULD BE USED IN GABIONS AT CORNERS OF STRUCTURES (FIGURE 10). AS AN ADDITIONAL MEASURE, SCAFFOLD PLANKING AS SHUTTERING ALONG THE FRONT FACE OR A PRE-FABRICATED SCAFFOLD TUBING FRAME SYSTEM CAN BE USED (FIGURE 11).

5. LEVEL OFF THE FILL 25mm TO 50mm ABOVE THE TOP OF THE MESH TO ALLOW FOR SETTLEMENT. SMALL MATERIAL IS BEST FOR THIS.

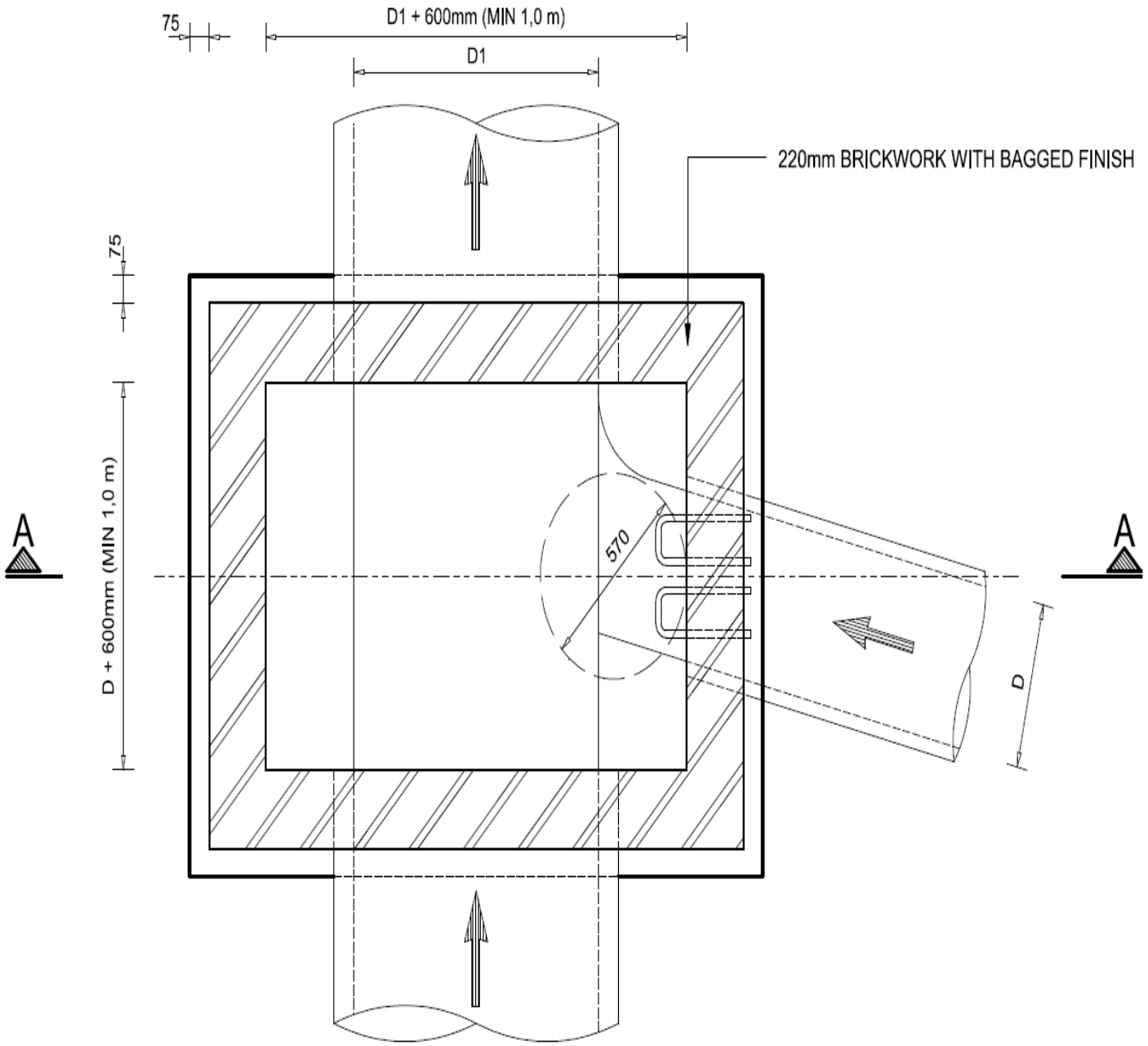
6. STRETCH THE LIDS TIGHTLY OVER THE FILLING USING A CROWBAR. SECURE THE CORNERS FIRST, BY MEANS OF THE THICK SELVEDGE WIRE PROTRUDING FROM THE LID CORNERS, TO ENSURE THAT THERE IS ENOUGH MESH TO COVER THE WHOLE AREA. SOME FILLING MAY HAVE TO BE REMOVED FROM THE TOP OF THE GABION BOX TO PREVENT THE LID FROM OVERSTRAINING, THEN SECURELY WIRE IT TO THE TOPS OF THE SIDES, ENDS AND DIAPHRAGMS, USING THE ALTENATE SINGLE AND DOUBLE LOOPS (FIGURE 12).

DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
ASSEMBLY AND ERECTION OF GABION BOXES

DRAWING NO.
RST 035

SCALE
N.T.S



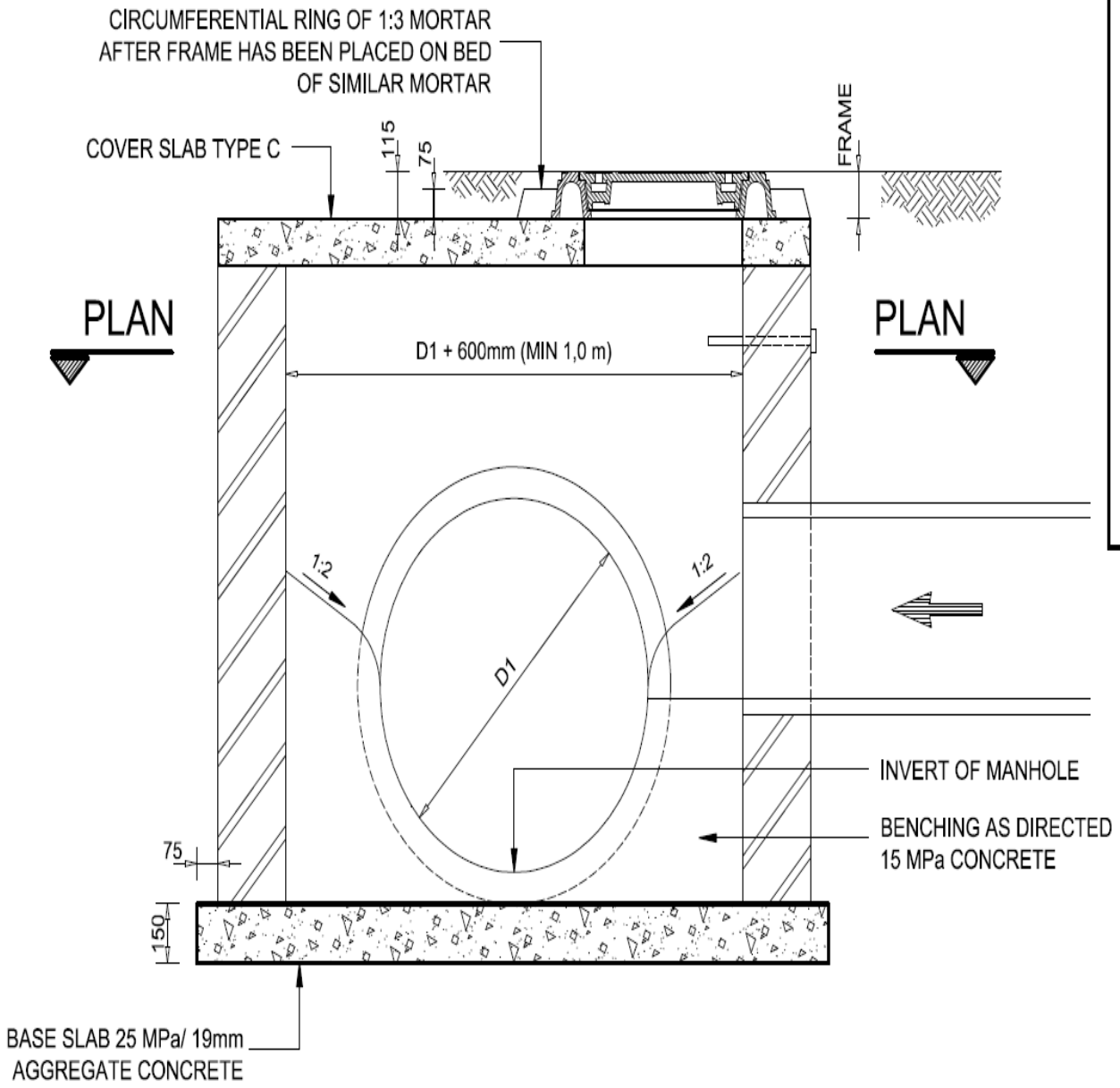
SECTIONAL PLAN

DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
MANHOLE: TYPE C – PLAN
(1 OF 2)

DRAWING NO.
RST 036

SCALE
1:20



SECTION A - A

NOTES:

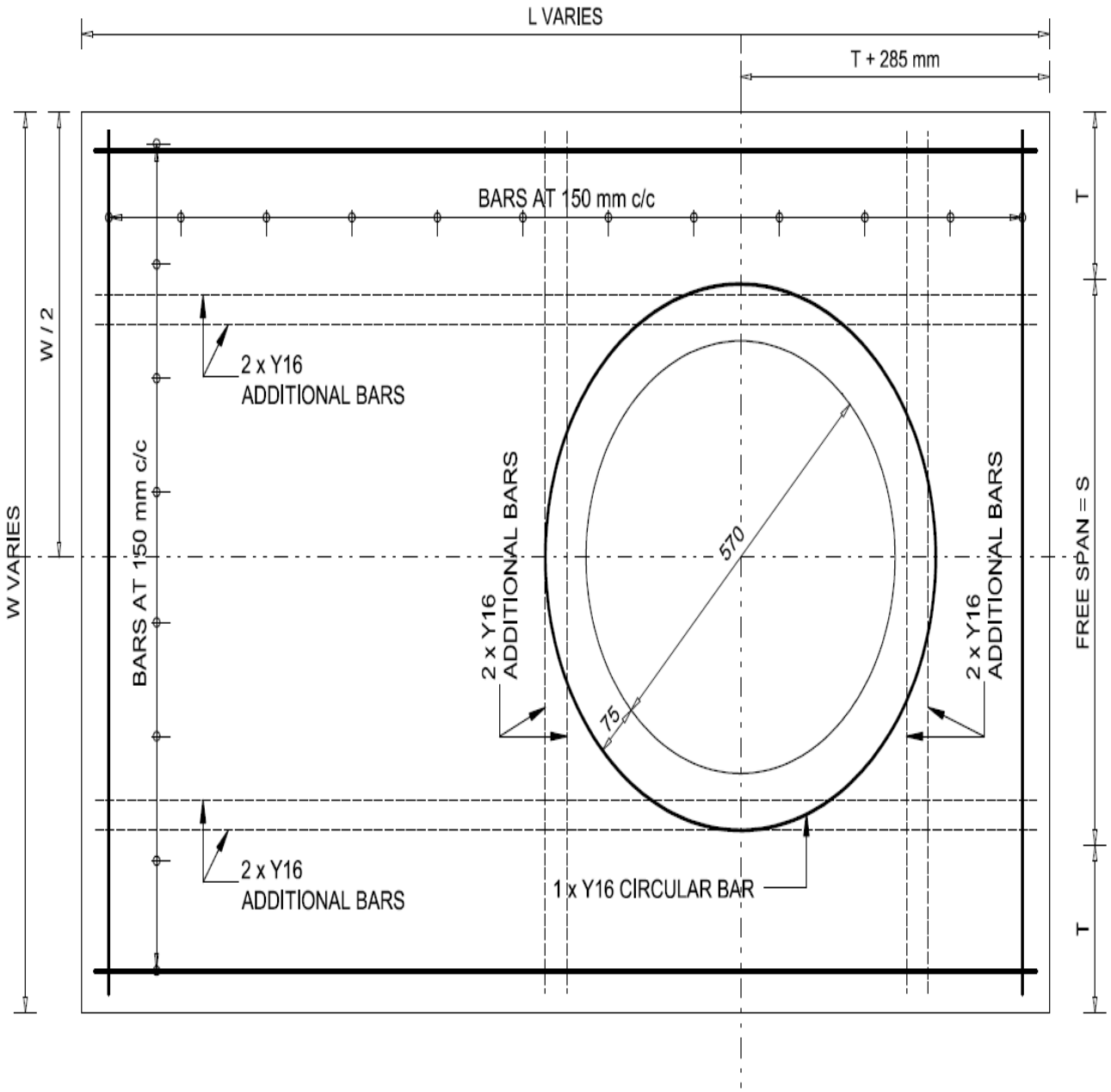
1. HINGED DUCTILE IRON COVER AND FRAME: SANS 50124 CLASS D400 SECUREZ Z-600-D (LOCKABLE) OR SIMILAR APPROVED
2. FOR USE WHERE DEPTH FROM COVER TO INVERT LEVEL IS 2,5M OR LESS.
3. STEP IRONS TO BE INSTALLED WHERE DEPTH FROM COVER TO INVERT IS MORE THAN 1,0M.
4. STEP IRONS SHALL HAVE A VERTICAL SPACING OF 300MM AND BE STAGGERED ALTERNATIVELY LEFT AND RIGHT AT 300MM C/C.
5. PIPE AND BENCHING ARRANGEMENT TYPICAL. VARIES WITH LAYOUT.

DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
MANHOLE: TYPE C – SECTION (2 OF 2)

DRAWING NO.
RST 037

SCALE
1:20



S	SLAB THICKNESS	BAR Ø
0 TO 1,5	150	Y16
>1,5 TO 2,5	200	Y25

NOTES:

1. For use with Type C and D Manholes.
2. Concrete 25 MPa.
3. Minimum cover to reinforcement 25mm.
4. All reinforcement to be placed at bottom of slab.
   Short span B1.
5. T: Wall width of brickwork.

DIHLABENG LOCAL MUNICIPALITY

DRAWING DESCRIPTION
COVER SLAB: TYPE C

DRAWING NO.
RST 038

SCALE
N.T.S