



**DEPARTMENT OF WATER & SANITATION
REPUBLIC OF SOUTH AFRICA**

DUE AT 11:00 ON

28 November 2016

BID DWS 52-0816 WTE

**RURAL COMMUNITY WATER SUPPLY AND
WATER SERVICES**

**EQUIPPING OF BOREHOLES
NATIONWIDE**

SUBMIT BID DOCUMENT

TO

POSTAL ADDRESS:
DIRECTOR-GENERAL: WATER & SANITATION
PRIVATE BAG X 313
PRETORIA,0001

OR

TO BE DEPOSIT IN:
THE BID BOX AT THE ENTRANCE
OF ZWAMADAKA BUILDING
157 FRANCIS BAARD STREET
PRETORIA,0002

BIDDER: (Company address and stamp)

COMPILED BY:

DEPARTMENT: WATER AND SANITATION
DIRECTORATE: STRATEGIC ASSET MANAGEMENT
SUB-DIRECTORATE: MECHANICAL MAINTENANCE

**BID DWS 52-0816 WTE
SCOPE OF WORK**

This bid makes provision for:

1. A three year term contract for equipping of boreholes for the Department of Water and Sanitation (Water Trading and Main account).
2. The specification of this bid shall apply to the Department of Water and Sanitation's Water Trading Entity and the Main Account.
3. Summary of the evaluation criteria
 Phase 1: Administration Compliance
 Phase 2: Specification Compliance
 Phase 3: Functionality and Capability
 Phase 4: B-BBEE and PRICE

Adjudication

SCHEDULE NO.	DESCRIPTION
1.	General (Rate Only) compulsory to complete in full
2.	Day works (Rate Only) compulsory to complete in full
3.	Small diameter Clearwater supply pipelines
4.	Hand pumps
5.	Windmills
6.	PVC storage tank installations
7.	Positive displacement borehole pumps, column and ancillary pipe work installation
8.	Pump house installation for boreholes
9.	Submersible pumps
10.	Electric motors
11.	Small electrical panels
12.	Diesel engines: Lister LT1
13.	Diesel engines: Lister TS1
14.	Diesel engines: Lister TS2
15.	Diesel engines: Lister TS3
16.	Diesel engines: Hatz 2G40
17.	Diesel engines: Hatz Z790
18.	Diesel engines: Hatz 815
19.	Diesel engines: Hatz 2M41
	Total (item 1-19)

THERE SHALL BE A COMPULSORY BRIEFING SESSION FOR THIS BID IN ALL NINE (9) PROVINCES. THE MEETING IS SCHEDULED FOR

DATE & TIME: 27 SEPTEMBER 2016 – 21 OCTOBER 2016 @ 11H00

VENUE: NINE (9) PROVINCES

FAILURE TO ATTEND THE COMPULSORY BRIEFING SESSION SHALL RENDER YOUR BID NON-RESPONSIVE.

THE DEPARTMENT OF WATER AND SANITATION (DWS) RESERVES THE RIGHT TO APPOINT OR NOT TO APPOINT ANY BIDDER OR ACCEPT ANY BID. DWS RESERVES THE RIGHT TO CANCEL THE TENDER PROCESS IF THERE ARE ANY REASONABLE REASONS, IN LINE WITH RELEVANT REGULATIONS.
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COMPULSORY BRIEFING SESSIONS

Compulsory briefing sessions will be held in nine (9) provinces. It is mandatory for all prospective bidders to attend at least one (1) of these sessions in the venue nearest to them and in dates and times provided below. Failure to do so shall invalidate your bid.

Gauteng Province:

Venue: Department of Water and Sanitation, Infrastructure Branch Training Centre,
1 Kwamhlanga rd, Roodeplaat Dam, Pretoria, 0001

Date: 27 September 2016

Time: 11:00am

North West Province:

Venue: Department of Water and Sanitation, Unit 99, ground floor Mega City Shopping Centre, Mahikeng

Date: 30 September 2016

Time: 11:00am

Northern Cape Province:

Venue: Department of Water and Sanitation, Regional Office, Kimberley

Date: 04 October 2016

Time: 11:00am

Free State Province:

Venue: Department of Water and Sanitation, Regional Office, Bloemfontein.

Date: 05 October 2016

Time: 11:00am

Western Cape Province:

Venue: Department of Water and Sanitation, 3 Blackenberg Street, Sigma Building, Bellville

Date: 07 October 2016

Time: 11:00am

Eastern Cape Province:

Venue: Department of Water and Sanitation, Regional Office, East London

Date: 11 October 2016

Time: 11:00am

Mpumalanga Province:

Venue: Department of Water and Sanitation, Prorom Building, cnr Brown & Paul Kruger str, Nelspruit

Date: 14 October 2016

Time: 11:00am

KwaZulu-Natal Province:

Venue: Department of Water and Sanitation, Regional Office, Southern Life Building, 88 Joe Slovo str., Durban

(To Be Confirmed)

Date: 18 October 2016

Time: 11:00am

Limpopo Province:

Venue 1: Department of Water and Sanitation, DWS office, Giyani

Date: 20 October 2016

Time: 11:00am

Venue 2: Department of Water and Sanitation, Azmo Building , 49 Joubert street, Polokwane

Date: 21 October 2016

Time: 11:00am

BID NO. DWS 52-0816 WTE**RURAL COMMUNITY WATER SUPPLY AND SERVICES****EQUIPPING OF BOREHOLES NATIONWIDE****BIDDER'S COMPULSORY BRIEFING SESSION BY THE DEPARTMENT:
WATER AND SANITATION****Deposit:** R200 cash per Bid (Not refundable)**Obtainable from:** Procurement Section
Zwamadaka Building
157 Francis Baard Street
PRETORIATel. (012) 336-7695/6
(012) 336-8988**Registration time:****Date:****Place/Venue:**

General and adjudication discussions.

BID ADVERTISING DATE: 02 September 2016**BID CLOSING DATE: 28 November 2016****ENQUIRIES:****DWS Head Office, Pretoria:**

J.A. Nel

Tel. (012) 336-8615

Fax: (012) 336 7656

Cell: 082 809 5920

Email: nelj@dwa.gov.za

J.L. Mkalipi

(012) 336 6112

(012) 336 7656

084 047 9497

mkalipij@dws.gov.za

J.H. Van Der Walt

(012) 336 6781

(012) 336 7656

060 569 2608

vanderwaltd@dws.gov.za

Contractor Signature: _____

Name: _____

Date: _____

(1) DWS Signature: _____

Name: _____

Date: _____

(2) DWS Signature: _____

Name: _____

Date: _____

BID DWS 52-0816 WTE

IMPORTANT INFORMATION

- ENQUIRIES : Chief Engineer
Department of Water and Sanitation
Room 311
Sedibeng Building
185 Francis Baard Street
PRETORIA
Private bag X313
PRETORIA
0001
- COMPILED BY: J.A. Nel J.L. Mkalipi J.H. Van Der Walt
Tel. (012) 336-8615 (012) 336 6112 (012) 336 6781
Fax: (012) 336 7656 (012) 336 7656 (012) 336 7656
Cell: 082 809 5920 084 047 9497 060 569 2608
Email: nelj@dwa.gov.za mkalipij@dws.gov.za vanderwaltd@dws.gov.za
- SUMMARY: The service/s required is that of supplying and delivering of:

Equipping of boreholes over a contract period of 36 months as required by the Department of Water and Sanitation (Water Trading and Main Account).
- ADJUDICATION: In adjudicating the bid, the complete bid contract will not necessarily be awarded to a single Bidder. More than one service provider may be appointed for items 1-19.

Orders will be placed for equipping of boreholes as required by the various DWS Regional offices and Construction Scheme offices (Main and Trading Account) of the Department Water and Sanitation over the 3-year period.

The bidders must provide the Department with five (5) projects for each Annexure B1-B4 for “Similar Work”:
- Annexure B1- Zinc Pump House Installation
 - Annexure B2- Concrete Pump House Installation
 - Annexure B3- Pipeline Installation
 - Annexure B4- PVC Storage Tanks Installation
- NOTE: The Department reserves the right to inspect the premises of the contractor/manufacturer/supplier or appoint a third party inspectorate on behalf of Department Water and Sanitation.
- ESCALATION: The formula to be used will be that contained in SBD 3.2-Pricing Schedule Non- Firm Prices (Purchases). Escalation will only be applied to material and labour rates. The month from where escalation calculations shall commence shall be the month in which this Bid closed.

TRANSPORT COSTS:

Note: not included in the bid price (Small delivery vehicles)

Tariff is in cents per kilometre (exclusive of VAT) as from 09 June 2016:

No back charge of tariffs will be before the under-mentioned dates for invoices already processed.

The rates will be updated as the Department of Transport rates are adjusted.

The contractor must decide which vehicle/s to use in order to calculate the transport costs in the price schedules.

Category A:

Sedans

Station Wagons

PETROL

Engine Category	Private
Up to 1250 CC	248.1
1251 - 1550	310.0
1551-1750	339.9
1751-1950	399.7
1951-2150	411.5
2151-2500	487.7
2501-3500	602.6
Greater than 3500	687.0

DIESEL

Engine Category	Private
Up to 1250	227.9
1251-1550	294.2
1551-1750	315.9
1751-1950	331.1
1951-2150	377.6
2151-2500	443.2
Greater than 2500	569.4

Category B:

Light Delivery Vehicles

Single Cab 4x2

Extended Cab 4x2

PETROL

Engine Category	Private
Up to 1250	225.8
1251-1550	278.9
1551-1750	286.2
1751-1950	348.9
1951-2150	387.3
2151-2500	397.4
2501-3500	421.1
Greater than 3500	488.9

DIESEL

Engine Category	Private
Up to 1250	257.6
1251-1550	314.9
1551-1750	348.9
1751-1950	355.4
1951-2150	394.3
2151-2500	417.7
2501-3500	449.8
Greater than 3500	529.8

Category C:

4x4 Light Delivery Vehicles
 All Double Cabs
 4x4 Single/ Extended Cabs

PETROL

Engine Category	Private
Up to 2000	367.4
2001 to 2500	420.7
2501-3500	481.9
Greater than 3500	548.1

DIESEL

Engine Category	Private
Up to 2000	368.4
2001 to 2500	447.9
2501-3500	500.6
Greater than 3500	572.8

Mark-up related rates for all vehicles not listed above must be supplied by the Bidder for approval with each and every Quotation.

Note 1: There is provision made for an additional rate for towing a trailer.

Note 2 : A mark-up of 10% will be applicable for hiring of transport.

The Department has the right to provide its own transport for collection and delivery of goods.

IMPORTANT:

Have forms SBD1, SBD2, SBD3.2, ANNEXURE 7, SBD 4, SBD6.1, SBD 6.2 , SBD8, ANNEXURE A,B,C and SBD9 been completed in all respects and signed 'correctly'

Have the contents thereof been noted by the bidder?

* YES / NO

Has a valid and original tax clearance certificate been obtained from the Receiver of Revenue and included with this bid?

* YES / NO

(Refer to Form SBD 2: Application for Tax Clearance Certificate)

MARK-UP FEE (SUPPLY OF MATERIAL)

The contractor will be entitled to mark-up fee as specified in the 'Form of Offer and Acceptance' on the services provided by a nominated sub-contractor. No mark-up fees will be applicable on the service of a sub-contractor. The mark-up fee is to provide for all services required to administer payments to the nominated sub-contractor.

The employer shall have no contractual relations with sub-contractor. However, if a sub-contractor is found by the employer to be incompetent in discharging its duties, the employer may request the inspector either to provide a sub-contractor with qualifications and experience acceptable to the employer as a replacement, or to resume the performance of the service itself.

Overheads, charges and profit

Note: A mark-up of 10 % will be applicable

Example: For a Total Amount = R100 000

10% mark-up of the Total Amount = R10 000

Total Mark-up = R 10 000

Indicate with a "Not Applicable" all items that are not available

Any enquiries regarding bidding procedures may be directed to the –

Department Water and Sanitation

Division: Procurement and PSP Administration

Private Bag X313, Pretoria, 0001.

Tel: (012) 336-7695 / 7696 / 7595 / 8988

NB: USE INK, PREFERABLY BLACK, TO FILL IN THIS FORM:

CLOSING TIME 11:00 ON:.....

NAME OF BIDDER:



BID NO.: DWS 52-0816 WTE
3-YEAR TERM CONTRACT FOR THE EQUIPPING OF BOREHOLES FOR THE
DEPARTMENT OF WATER AND SANITATION (WATER TRADING AND
MAIN ACCOUNT) NATIONWIDE

INDEX

THIS BID COMPRISES OF THE FOLLOWING DOCUMENTS:

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ANNEXURE 7	INSTRUCTION TO BIDDERS: PURCHASES	3 pages
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SBD 5	THE NATIONAL INDUSTRIAL PARTICIPATION PROGRAMME	3 pages
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	GOVERNMENT PROCUREMENT: GENERAL CONDITIONS OF CONTRACT	10 pages
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	APPENDIX AND CONDITIONS OF CONTRACT CIVIL	2 pages
	AGREEMENT: GENERAL CONDITIONS OF CONTRACT	1 page
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	FORM OF OFFER AND ACCEPTANCE	4 pages
ANNEXURE A	PROPOSED ALTERATIONS TO SPECIFICATION	1 page
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SECTION 5	PRICE SCHEDULES	66 pages

EVALUATION CRITERIA

The 90/10 preference points system as prescribed in the Preferential Procurement Regulations, 2011 Pertaining to the Preferential Procurement Policy Framework Act, (ACT NO 5 OF 2000) (PPPFA) will be applied to evaluate this bid. The lowest acceptable bid will score 90 points for price and a maximum of 10 points will be awarded for attaining the Broad-Based Black Economic Empowerment (B-BBEE) Status Level of Contribution. Bids received will be evaluated on the four (4) phases namely **Mandatory Requirements, Specification Compliance, Functionality Compliance** and **Price and Preference**.

The bid proposals received will be evaluated in four (4) phases namely:

- Administrative Compliance
- Phase 1 - bids will be evaluated based on Mandatory Requirements
- Phase 2 - bids will be evaluated based on Specification Compliance
- Phase 3 - bids will be evaluated on Functionality Compliance
- Phase 4 - bids will be evaluated for Price and BBEE in accordance with the 90/10 preference points system as stipulated above and further detailed in Phase 4.

Administration Compliance

Bidders are required to comply with the following listed below:

- Tax Compliant with SARS.
 - Completion, signing and submission of SBD forms with the bid documents (i.e. SBD 1, SBD 3.2, Annexure 7, SBD 4, SBD5, SBD 6.1, SBD 8 and SBD 9).
 - Active registration with CIPC/ CIPRO.
1. Evaluation **Method 2**, which entails the balance between **Functionality, Financial Offer and Price and Preferences (90/10)** points system, will be adopted as follows;
 - 1.1.1 Functionality Points = max 100 points (Minimum threshold = 65%)
 - 1.1.2 Price = 90 points (tenders will be awarded a maximum of 90 points for price)
 - 1.1.3 Preference (B-BBEE) = 10 points

Phase 1: Mandatory Requirements

1. National Treasury's Central Supplier Database Registration Certificate.
2. Letter of Good Standing from the Compensation Commissioner (COID).
3. Letter of Good Standing from the Department of Labour (UIF).
4. Active registration with CIDB with a minimum of Grade 2ME.
5. Audited company financial statements for the past two financial years.
6. Bidders compulsory briefing session

Phase 2: Specification Compliance

Bidders must comply with all the technical specifications of this bid. Omission to complete and/or submit the listed documents will render your bid non responsive and the bid will not be considered for the Phase 3 evaluation.

1. Technical Brochure which provides the technical details of the specified model offered in this bid.
2. A draft Quality Management Plan for use during the contract in response to clause PS4.6.3.
3. Declaration of availability of in-house experience and manufacturing facilities by way of listing at least five (5) projects for each Annexure B1 – B4:
 - a. Details of premises
 - b. Machinery and equipment schedules.
4. The contract includes the following duties in respect of the works and will be check if the contractor complies to the following:

Description	Comply	No Comply
Annexure A: Proposed alterations to specification?		
Annexure B1: Zinc Pump House Installation		
Annexure B2: Concrete Pump House Installation		
Annexure B3: Pipeline Installation		
Annexure B4: PVC Storage Tanks Installation		
Annexure C: Schedule of proposed sub-contractor?		

Phase 3: Functionality and Capability

Bidders must score at least **65 out of 100** in respect of functionality in order to qualify for advancement to Phase 2. A bidder that scores less than **65 out of 100** will be regarded as submitting a non-responsive bid and will be disqualified.

The weight that will be allocated to each functionality criterion is as follows:

1 = poor, 2 = average, 3 = good, 4 = very good, and 5 = excellent

Evaluation will be based on a point system. The following is the weighting awarded for each element:

	CRITERIA	Maximum Points (minimum)	SCORE
1	Ability and Capability Submission of the most recent audited Annual Financial Statements of the last financial year produced in accordance with the Company's Act (Viability).	15	
	Submission of organization and staffing proposals and CVs. A schedule should be attached including full time and part time employees.	15	
2	Methodology Project plan and broad methodologies in line with the task descriptions outlined under project scope/task description, with clear milestones and timeframes for each tasked to be completed.	35	
3	Similar work done - Annexure B FULLY completed with contactable details ➤ 2 points for each project listed up to max of 20 Partially completed project references will be disregarded.	20	
4	Track Record Contactable reference evaluation: - Quality of work – 10 point (s) - Workshop facilities– 5 points Each contactable reference to score bidder on a scale of 1 to 5 in response to the above two criteria. The average of each criteria score is used to calculate a pro rate score – max score therefore 15.	15	
	Values: 0= Unacceptable; 1= Poor; 2= Average; 3= Good; 4= Very Good; 5= Excellent.	100	

Phase 4: B-BBEE and PRICE

During this phase, bidders will be further evaluated based on 90 points for price and 10 points for attaining the B-BBEE Status Level of Contributor in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (90/10 system)
1	10
2	9
3	8
4	5
5	4
6	3
7	2
8	1
Non-compliant contributor	0

In order to claim the B-BBEE Status Level of Contributor points, bidders must submit original and valid B-BBEE Status Level Verification Certificates or certified copies thereof, issued by accredited Verification Agency/s by SANAS or Registered Auditor approved by Independent Regulatory Board of Auditor (IRBA), together with their bids to substantiate their B-BBEE rating claims. The Exempted Micro Enterprise must submit a letter from the Accounting Officer who is appointed in terms of Close Corporation Act. EMEs are allowed to submit a sworn affidavit obtainable from the Department of Trade and Industry website.

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 B-BBEE but will not be disqualified from the bidding process. They will score points out of 90 for price only and zero (0) points out of 10 for B-BBEE.

SUB-CONTRACTING

A bidder must not be awarded the points claimed for B-BBEE status level of contribution if it is indicated in the bid documents that such a bidder intends sub-contracting more than 25% of the contract value to any other enterprise that does not qualify for at least the same number of points that the bidder qualifies for, unless the intended sub-contractor is an EME that has the capability and ability to execute the sub-contract.

A contractor is not allowed to sub-contract more than 25% of the contract value to another enterprise that does not have equal or higher B-BBEE status level, unless the intended sub-contractor is an EME that has the capability and ability to execute the sub-contract.

In relation to a designated sector, a contractor must not be allowed to sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

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

Bidders must supply a **valid original tax clearance certificate** with their bid submission. Failure to submit a valid original tax clearance certificate will automatically disqualify the bidder.

Special Conditions

National Treasury's Central Supplier Database.

With effect from 1 April 2016, accounting officers and accounting authorities may not award any bid to a supplier not registered as a prospective supplier on the National Treasury's Central Supplier Database.

COMPULSORY DOCUMENTS – QUESTIONNAIRE

BID DWS 52-0816 WTE

Note: None compliance to the criteria set out in Evaluation Phase 1, 2 , 3 and 4 shall render your Bid or Offer non-responsive

DOCUMENTS TO BE COMPLETED IN FULL, SIGNED AND SUBMITTED WITH BID	YES(√)	NO(√)	SIGNATURE
Did you read and understand the entire bid document?			
PHASE 1			
Compulsory Documents to be completed by Bidder			
SBD.1 Completed and signed			
SBD.2 Completed and signed			
SBD.3.2 Completed and signed			
Annexure 7 Invitation to Bidders: Purchases			
SBD.4 Completed and signed			
SBD 5 Completed and signed			
SBD.6.1 Completed and signed			
SBD.8 Completed and signed			
SBD.9 Completed and signed			
SAP Vendor Form			
Did you attach an Original and Valid TAX clearance certificate?			
Did you attach an original or certified copy of your Company registration certificate?			
Are you in a joint venture?			
If YES, attach signed agreement.			
Also submit both (all) relevant TAX clearance certificates if you are a joint venture.			
Did you attach a certified copy of your Company compensation fund compliance certificate? Attach a letter of Good Standing with COIDA and UIF.			
Did you attach an original or certified copy of B-BBEE Rating Certification with bid? (Refer to SBD 6.1)			
Did you complete all Price Schedules (Items 1-19), including SBD 3.2?			
Do you comply with the OHS Act85 of 1993 as amended? Complete and sign			
Have you organised to attend the compulsory briefing meeting?			
Did you attach audited company financial statements for the past two financial years?			

Have you provided proof of CIBD grading or registration of 2ME			
Are you registered on National Treasury's Central Supplier Database (CSD)? Attach copy of Registration.			
PHASE 2			
Have you provided a technical brochure which provides details of the specified model offered in this bid?			
Have you provided a quality management plan? "QCP"			
Annexure A Completed and signed?			
Annexure B1-B4 Completed and signed?			
Annexure C Completed and signed, including tax clearance certificate of your sub-contractors only?			
Did you attach "Letters of Support" from all your sub-contractors?			
Is your offer to specification (Annexure A)?			
Has deviation been specified? (Refer to Annexure A)			
Have you provided details of premises and workshops?			
PHASE 3			
Did you complete Annexure B – Schedule of Similar Work?			
Have you provided full contactable details for Annexure B?			
Have you completed the CV forms?			
PHASE 4			
Did you submit certified copies of your valid B-BBEE Status Level Verification Certificates?			

NAME OF BIDDER: _____

NAME OF COMPANY: _____

SIGNATURE OF BIDDER: _____ DATE: _____

INVITATION TO BID

SBD 1

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE DEPARTMENT OF WATER & SANITATION

BID NUMBER: DWS 52-0816 WTE

CLOSING DATE:

CLOSING TIME: 11:00

DESCRIPTION Rural community water supply and water services equipping of boreholes nationwide

The successful bidder will be required to fill in and sign a written Contract Form (SBD 7).

BID DOCUMENTS MAY BE POSTED TO:

**POSTAL ADDRESS: DIRECTOR-GENERAL: WATER AND SANITATION
PRIVATE BAG X 313
PRETORIA, 0001**

OR

**DEPOSITED IN THE BID BOX SITUATED AT (STREET ADDRESS)
THE TENDER BOX AT THE ENTRANCE
OF ZWAMADAKA BUILDING
157 FRANCIS BAARD STREET
PRETORIA, 0002**

Bidders should ensure that bids are delivered timeously to the correct address. If the bid is late, it will not be accepted for consideration.

The bid box is generally open 24 hours a day, 7 days a week.

ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS – (NOT TO BE RE-TYPED)

THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2011, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT

**THE FOLLOWING PARTICULARS MUST BE FURNISHED
(FAILURE TO DO SO MAY RESULT IN YOUR BID BEING DISQUALIFIED)**

NAME OF BIDDER

POSTAL ADDRESS

STREET ADDRESS

TELEPHONE NUMBER CODE.....NUMBER.....

CELLPHONE NUMBER

FACSIMILE NUMBER CODE.....NUMBER.....

E-MAIL ADDRESS

VAT REGISTRATION NUMBER

HAS AN ORIGINAL AND VALID TAX CLEARANCE CERTIFICATE BEEN SUBMITTED? (SBD 2)

YES or NO

HAS A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE BEEN SUBMITTED? (SBD 6.1)

YES or NO

IF YES, WHO WAS THE CERTIFICATE ISSUED BY?

AN ACCOUNTING OFFICER AS CONTEMPLATED IN THE CLOSE CORPORATION ACT (CCA).....

A VERIFICATION AGENCY ACCREDITED BY THE SOUTH AFRICAN ACCREDITATION SYSTEM (SANAS); OR.....

A REGISTERED AUDITOR

[TICK APPLICABLE BOX]

(A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE)

ARE YOU THE ACCREDITED REPRESENTATIVE
IN SOUTH AFRICA FOR THE GOODS / SERVICES / WORKS OFFERED?

YES or NO

[IF YES ENCLOSE PROOF]

SIGNATURE OF BIDDER

DATE

CAPACITY UNDER WHICH THIS BID IS SIGNED

TOTAL BID PRICE..... TOTAL NUMBER OF ITEMS OFFERED

ANY ENQUIRIES REGARDING THE BIDDING PROCEDURE MAY BE DIRECTED TO:

Department: Water and Sanitation

Contact Person: JULIA DIRANE \ THEMBEKA HLAZO \ THANDI PLAATJIE \ ANELE NDAMASE

Tel: 012 336 3182 \ 7066 \ 8364 \ 7432

Fax: 012 336 6963

E-mail address: diranej@dwa.gov.za \ hlazot@dwa.gov.za \ plaatjiet@dwa.gov.za \ ndamasea@dwa.gov.za

_

ANY ENQUIRIES REGARDING TECHNICAL INFORMATION MAY BE DIRECTED TO:

Contact Person: JA Nel / D van der Walt / J Mkalipi

Tel: 012 336-8615 / 082 809 5920 / 012 336-6751 / 060 569 2608 / 012 336-8623

Fax: 012 323-2791 / 086 518 7676

E-mail address: nela@dwa.gov.za / vanderwaltd@dwa.gov.za / mkalipij@dwa.gov.za

TAX CLEARANCE CERTIFICATE REQUIREMENTS

It is a condition of bid that the taxes of the successful bidder must be in order, or that satisfactory arrangements have been made with South African Revenue Service (SARS) to meet the bidder's tax obligations.

- 1 In order to meet this requirement bidders are required to complete in full the attached form TCC 001 "Application for a Tax Clearance Certificate" and submit it to any SARS branch office nationally. The Tax Clearance Certificate Requirements are also applicable to foreign bidders / individuals who wish to submit bids.
- 2 SARS will then furnish the bidder with a Tax Clearance Certificate that will be valid for a period of 1 (one) year from the date of approval.
- 3 The original Tax Clearance Certificate must be submitted together with the bid. Failure to submit the original and valid Tax Clearance Certificate will result in the invalidation of the bid. Certified copies of the Tax Clearance Certificate will not be acceptable.
- 4 In bids where Consortia / Joint Ventures / Sub-contractors are involved, each party must submit a separate Tax Clearance Certificate.
- 5 Copies of the TCC 001 "Application for a Tax Clearance Certificate" form are available from any SARS branch office nationally or on the website www.sars.gov.za.
- 6 Applications for the Tax Clearance Certificates may also be made via eFiling. In order to use this provision, taxpayers will need to register with SARS as eFilers through the website www.sars.gov.za.



TAX CLEARANCE

TCC 001

Application for a Tax Clearance Certificate**Purpose**

Select the applicable option

Tenders ☐Good standing ☐

If "Good standing", please state the purpose of this application

Particulars of applicantName/Legal name
(Initials & Surname
or registered name)Trading name
(if applicable)

ID/Passport no

Company/Close Corp.
registered no

Income Tax ref no

PAYE ref no 7

VAT registration no 4

SDL ref no L

Customs code

UIF ref no U

Telephone no

Fax
no

E-mail address

Physical address

Postal address

Particulars of representative (Public Officer/Trustee/Partner)

Surname

First names

ID/Passport no

Income Tax ref no

Telephone no

Fax
no

E-mail address

Physical address

Particulars of tender (If applicable)

Tender number

Estimated Tender amount

R

Expected duration of the tender

year(s)

Particulars of the 3 largest contracts previously awarded

Date started

Date finalised

Principal

Contact person

Telephone number

Amount

AuditAre you currently aware of any Audit investigation against you/the company?
If "YES" provide details

YES

NO

Appointment of representative/agent (Power of Attorney)

I the undersigned confirm that I require a Tax Clearance Certificate in respect of Tenders or Goodstanding.

I hereby authorise and instruct to apply to and receive from SARS the applicable Tax Clearance Certificate on my/our behalf.

Signature of representative/agent

Date

Name of representative/agent

Declaration

I declare that the information furnished in this application as well as any supporting documents is true and correct in every respect.

Signature of applicant/Public Officer

Date

Name of applicant/
Public Officer**Notes:**

1. It is a serious offence to make a false declaration.
2. Section 75 of the Income Tax Act, 1962, states: Any person who
 - (a) fails or neglects to furnish, file or submit any return or document as and when required by or under this Act; or
 - (b) without just cause shown by him, refuses or neglects to-
 - (i) furnish, produce or make available any information, documents or things;
 - (ii) reply to or answer truly and fully, any questions put to him ...

As and when required in terms of this Act ... shall be guilty of an offence ...
3. **SARS will, under no circumstances, issue a Tax Clearance Certificate unless this form is completed in full.**
4. Your Tax Clearance Certificate will only be issued on presentation of your South African Identity Document or Passport (Foreigners only) as applicable.

PRICING SCHEDULE – NON-FIRM PRICES (PURCHASES)

NOTE: PRICE ADJUSTMENTS WILL BE ALLOWED AT THE PERIODS AND TIMES SPECIFIED IN THE BIDDING DOCUMENTS.

IN CASES WHERE DIFFERENT DELIVERY POINTS INFLUENCE THE PRICING, A SEPARATE PRICING SCHEDULE MUST BE SUBMITTED FOR EACH DELIVERY POINT

Name of Bidder.....	Bid number.....
Closing Time 11:00	Closing date.....

OFFER TO BE VALID FOR...90.....DAYS FROM THE CLOSING DATE OF BID.

ITEM NO. INCLUDED)	QUANTITY	DESCRIPTION	BID PRICE IN RSA CURRENCY **(ALL APPLICABLE TAXES
--------------------------	----------	-------------	--

- Required by:
- At:
- Brand and model
- Country of origin
- Does the offer comply with the specification(s)? *YES/NO
- If not to specification, indicate deviation(s)
- Period required for delivery
- Delivery: *Firm/not firm

** "all applicable taxes" includes value- added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies.

*Delete if not applicable

PRICE ADJUSTMENTS

A NON-FIRM PRICES SUBJECT TO ESCALATION

1. IN CASES OF PERIOD CONTRACTS, NON FIRM PRICES WILL BE ADJUSTED (LOADED) WITH THE ASSESSED CONTRACT PRICE ADJUSTMENTS IMPLICIT IN NON FIRM PRICES WHEN CALCULATING THE COMPARATIVE PRICES
2. IN THIS CATEGORY PRICE ESCALATIONS WILL ONLY BE CONSIDERED IN TERMS OF THE FOLLOWING FORMULA:

$$Pa = (1 - V)Pt \left(D1 \frac{R1t}{R1o} + D2 \frac{R2t}{R2o} + D3 \frac{R3t}{R3o} + D4 \frac{R4t}{R4o} \right) + VPt$$

Where:

Pa	=	The new escalated price to be calculated.
(1-V)Pt	=	85% of the original bid price. Note that Pt must always be the original bid price and not an escalated price.
D1, D2..	=	Each factor of the bid price eg. labour, transport, clothing, footwear, etc. The total of the various factors D1, D2...etc. must add up to 100%.
R1t, R2t.....	=	Index figure obtained from new index (depends on the number of factors used).
R1o, R2o	=	Index figure at time of bidding.
VPt	=	15% of the original bid price. This portion of the bid price remains firm i.e. it is not subject to any price escalations.

3. The following index/indices must be used to calculate your bid price:

Index..... Dated.....	Index..... Dated.....	Index..... Dated.....
Index..... Dated.....	Index..... Dated.....	Index..... Dated.....

4. FURNISH A BREAKDOWN OF YOUR PRICE IN TERMS OF ABOVE-MENTIONED FORMULA. THE TOTAL OF THE VARIOUS FACTORS MUST ADD UP TO 100%.

FACTOR (D1, D2 etc. eg. Labour, transport etc.)	PERCENTAGE OF BID PRICE

B PRICES SUBJECT TO RATE OF EXCHANGE VARIATIONS

1. Please furnish full particulars of your financial institution, state the currencies used in the conversion of the prices of the items to South African currency, which portion of the price is subject to rate of exchange variations and the amounts remitted abroad.

PARTICULARS OF FINANCIAL INSTITUTION	ITEM NO	PRICE	CURRENCY	RATE	PORTION OF PRICE SUBJECT TO ROE	AMOUNT IN FOREIGN CURRENCY REMITTED ABROAD
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		

2. Adjustments for rate of exchange variations during the contract period will be calculated by using the average monthly exchange rates as issued by your commercial bank for the periods indicated hereunder: (Proof from bank required)

AVERAGE MONTHLY EXCHANGE RATES FOR THE PERIOD:	DATE DOCUMENTATION MUST BE SUBMITTED TO THIS OFFICE	DATE FROM WHICH NEW CALCULATED PRICES WILL BECOME EFFECTIVE	DATE UNTIL WHICH NEW CALCULATED PRICE WILL BE EFFECTIVE

DEPARTMENT OF WATER AND SANITATION

INSTRUCTIONS TO BIDDERS: PURCHASES

1. The standard bidding forms should not be retyped or redrafted but photocopies may be prepared and used. Additional offers may be made of any item but only on a photocopy of the page in question or on other forms obtainable from the Head of Procurement: Department of Water and Sanitation, Private Bag X313, Pretoria, 0001, Attention: Supply Chain Management Office. Additional offers made in any other manner may be disregarded.
2. Should standard bid forms not be filled in by means of mechanical devices, for example typewriters, ink, preferably black, must be used to fill in bids.
3. Bidders shall check the numbers of the pages and satisfy themselves that none are missing or duplicated. No liability shall be accepted in regard to claims arising from the fact that pages are missing or duplicated.
4. Where items are specified in detail, the specifications form an integral part of the bid document and bidders shall indicate in the space provided whether the items offered are to specification or not.
5. In respect of the paragraphs where the items offered are strictly to specification, bidders shall insert the words "as specified".
6. In cases where the items are not to specification, the deviations from the specifications shall be indicated.
7. The bid prices shall be given in the units shown.
8. With the exception of basic prices, where required, all prices shall be quoted in South African currency.
9. Delivery basis:
 - (a) Supplies which are held in stock or are in transit or on order from South African manufacturers at the date of bid, shall be offered on a basis of delivery into consignee's store or on his site within the free delivery area of the bidder's centre, or carriage paid consignee's station if the goods are required elsewhere.
 - (b) Notwithstanding the provisions of paragraph 9(a), bid prices for supplies in respect of which installation/erection/assembly is a requirement, shall include ALL costs on a basis of delivered on site as specified.
10. Unless specifically provided for in the bid document, no bids transmitted by telegram, telex, facsimile, e-mail or similar apparatus shall be considered.

ANNEXURE 7

11. Bids received after the closing date and time are late and will as a rule not be accepted for consideration.
12. Bids will be opened in public, that is, bidders or their representatives may be present. If requested by any bidder, the names of bidders and if practical the total amount of each bid and of any alternative bids, will be read aloud.
13. The period for which offers are to remain valid and binding is indicated in the bid documents and is calculated from the closing date on the understanding that offers are to remain in force and binding until the close of business on the last day of the period calculated and if this day falls on a Saturday, Sunday or public holiday, the bid is to remain valid and binding until the close of business on the following working day.
14. These conditions (Annexure 7) form part of the bid and failure to comply therewith may invalidate a bid.
15. Bidders are requested to promote local content optimally. Bidders who use locally manufactured components, products, equipment and systems, may claim preferences as set out in the Preference Points Claim Form, if attached.
16. After public opening of bids, information relating to the examination, clarification and evaluation of bids and recommendations concerning awards will not be disclosed to bidders or other persons not officially concerned with the process, until the successful bidder is notified of the award. The bid documentation of bidders is considered to be confidential and will under no circumstances be made available to other bidders or other persons.
17. If you are a supplier but not the actual manufacturer and will be sourcing the product(s) from another company, a letter from that company(ies)/supplier(s) confirming firm supply arrangement(s) in this regard, has to accompany your bid and failure to submit the document may invalidate your bid.
- 17.1 The said company/supplier must confirm that it has familiarised itself with the item description, specifications and bid conditions and if the bid consist of more than one item it should be clearly indicated in respect of which item(s) the supportive letter has been issued.
18. The financial standing of bidders and their ability to manufacture or to supply goods or to render a service may be examined before their bids are considered for acceptance.
19. The Department may, where a bid relates to more than one item, accept such bid in respect of any specific item or items and also accept part of the specified quantity of any specific item or items.
20. The Department is not obliged to accept any bid. The evaluation of a bid will be done in accordance with the Preferential Procurement Policy Framework Act, 2000 (Act no. 5 of 2000) and its regulations.

ANNEXURE 7

21. After approval of the bid, both parties must sign a written contract. The Contract Form must be filled in duplicate by both the successful bidder and the purchaser. Both Contract Forms must be signed in the original so that the successful bidder and the purchaser would be in possession of originally signed contracts for their respective records.
- 21.1 Failure of the successful bidder to sign the Contract Form in ink may result in the invalidation of their bid.

Special Conditions of Bid: Purchases

July 2004

ANNEXURE B

SBD 4

DECLARATION OF INTEREST

- [illegible]

- 1.6.1 The names of all directors/trustees/shareholders/members, their individual identity numbers, tax reference numbers and, if applicable, employee/PERSAL numbers must be indicated in paragraph 3 below.

¹"State" means –

- (a) 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);
- (b) any municipality or municipal entity;
- (c) provincial legislature;
- (d) national Assembly or the national Council of provinces; or
- (e) Parliament.

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

- 2.7 Are you or any person connected with the bidder presently employed by the state?

YES

NO

- 2.7.1 If so, furnish the following particulars:

Name of person/director/trustee shareholder/member:

Name of state institution at which you or the person connected to the bidder is employed:

Position occupied in the state institution:

Any other particulars:

- 2.7.2 If you are presently employed by the state, did you obtain the appropriate authority to undertake remunerative work outside employment in the public sector?

YES

NO

- 2.7.2.1 If yes, did you attach proof of such authority to the bid document?

YES

NO

(Note: Failure to submit proof of such authority, where applicable, may result in the disqualification of the bid.)

- 2.7.2.2 If no, furnish reasons for non-submission of such proof:

2.8 Did you or your spouse, or any of the company's directors/trustees/shareholders/members or their spouses conduct business with the state in the previous twelve months?

YES

NO

2.8.1 If so, furnish particulars:

2.9 Do you, or any person connected with the bidder, have any relationship (family, friend, other) with a person employed by the state and who may be involved with the evaluation and or adjudication of this bid?

YES

NO

2.9.1 If so, furnish particulars

2.10 Are you, or any person connected with the bidder, aware of any relationship (family, friend, other) between any other bidder and any person employed by the state who may be involved with the evaluation and or adjudication of this bid?

YES

NO

2.10.1 If so, furnish particulars.

2.11 Do you or any of the directors/trustees/shareholders/members of the company have any interest in any other related companies whether or not they are bidding for this contract?

YES

NO

2.11.1 If so, furnish particulars:

3 Full details of directors/trustees/members/shareholders

Full Name	Identity Number	Personal Income Tax Reference Number	State Employee Number/Persal Number

4 DECLARATION

I, THE UNDERSIGNED (NAME) _____

CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 2 and 3 ABOVE IS CORRECT. I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

Signature

Date

Position

Name of bidder

This document must be signed and submitted together with your bid

THE NATIONAL INDUSTRIAL PARTICIPATION PROGRAMME

INTRODUCTION

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

1 PILLARS OF THE PROGRAMME

- 1.1 The NIP obligation is benchmarked on the imported content of the contract. Any contract having an imported content equal to or exceeding US\$ 10 million or other currency equivalent to US\$ 10 million will have a NIP obligation. This threshold of US\$ 10 million can be reached as follows:
 - (a) Any single contract with imported content exceeding US\$10 million.
or
 - (b) Multiple contracts for the same goods, works or services each with imported content exceeding US\$3 million awarded to one seller over a 2 year period which in total exceeds US\$10 million.
or
 - (c) A contract with a renewable option clause, where should the option be exercised the total value of the imported content will exceed US\$10 million.
or
 - (d) Multiple suppliers of the same goods, works or services under the same contract, where the value of the imported content of each allocation is equal to or exceeds US\$ 3 million worth of goods, works or services to the same government institution, which in total over a two (2) year period exceeds US\$10 million.
- 1.2 The NIP obligation applicable to suppliers in respect of sub-paragraphs 1.1 (a) to 1.1 (c) above will amount to 30 % of the imported content whilst suppliers in respect of paragraph 1.1 (d) shall incur 30% of the total NIP obligation on a *pro-rata* basis.
- 1.3 To satisfy the NIP obligation, the DTI would negotiate and conclude agreements such as investments, joint ventures, sub-contracting, licensee production, export promotion, sourcing arrangements and research and development (R&D) with partners or suppliers.

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

2 REQUIREMENTS OF THE DEPARTMENT OF TRADE AND INDUSTRY

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

- 2.2 The purpose for reporting details of contracts in excess of the amount of R10 million (ten million Rands) is to cater for multiple contracts for the same goods, works or services; renewable contracts and multiple suppliers for the same goods, works or services under the same contract as provided for in paragraphs 1.1.(b) to 1.1. (d) above.

3 BID SUBMISSION AND CONTRACT REPORTING REQUIREMENTS OF BIDDERS AND SUCCESSFUL BIDDERS (CONTRACTORS)

- 3.1 Bidders are required to sign and submit this Standard Bidding Document (SBD 5) together with the bid on the closing date and time.

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

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

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

4 PROCESS TO SATISFY THE NIP OBLIGATION

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

- a. the contractor and the DTI will determine the NIP obligation;
- b. the contractor and the DTI will sign the NIP obligation agreement;

- c. the contractor will submit a performance guarantee to the DTI;
- d. the contractor will submit a business concept for consideration and approval by the DTI;
- e. upon approval of the business concept by the DTI, the contractor will submit detailed business plans outlining the business concepts;
- f. the contractor will implement the business plans; and
- g. the contractor will submit bi-annual progress reports on approved plans to the DTI.

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

Bid number	Closing date:.....
Name of bidder.....	
Postal address	
.....	
Signature.....	Name (in print).....
Date.....	

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2011

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, 2011.

1. GENERAL CONDITIONS

- 1.1 The following preference point systems are applicable to all bids:
- the 90/10 system for requirements with a Rand value above R1 000 000 (all applicable taxes included).
- 1.2 The value of this bid is estimated to exceed R1 000 000 (all applicable taxes included) and therefore the 90/10 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	90
1.3.1.2 B-BBEE STATUS LEVEL OF CONTRIBUTION	10
Total points for Price and B-BBEE must not exceed	100
1.4 Failure on the part of a bidder to fill in and/or to sign this form and submit a B-BBEE Verification Certificate from a Verification Agency accredited by the South African Accreditation System (SANAS) or a Registered Auditor approved by the Independent Regulatory Board of Auditors (IRBA) or an Accounting Officer as contemplated in the Close Corporation Act (CCA) 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 **"all applicable taxes"** includes value-added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies;
- 2.2 **"B-BBEE"** means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;
- 2.3 **"B-BBEE status level of contributor"** means the B-BBEE status received by a measured entity based on its overall performance using the relevant scorecard contained in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;
- 2.4 **"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 services, works or goods, through price quotations, advertised competitive bidding processes or proposals;
- 2.5 **"Broad-Based Black Economic Empowerment Act"** means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- 2.6 **"comparative price"** means the price after the factors of a non-firm price and all unconditional discounts that can be utilized have been taken into consideration;
- 2.7 **"consortium or joint venture"** 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;
- 2.8 **"contract"** means the agreement that results from the acceptance of a bid by an organ of state;
- 2.9 **"EME"** means any enterprise with an annual total revenue of R5 million or less .
- 2.10 **"Firm price"** means the price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs or excise duty and any other duty, levy, or tax, which, in terms of the law or regulation, is binding on the contractor and demonstrably has an influence on the price of any supplies, or the rendering costs of any service, for the execution of the contract;
- 2.11 **"functionality"** means the measurement according to predetermined norms, as set out in the bid documents, of a service or commodity that is designed to be practical and useful, working or operating, taking into account, among other factors, the quality, reliability, viability and durability of a service and the technical capacity and ability of a bidder;
- 2.12 **"non-firm prices"** means all prices other than "firm" prices;
- 2.13 **"person"** includes a juristic person;
- 2.14 **"rand value"** means the total estimated value of a contract in South African currency, calculated at the time of bid invitations, and includes all applicable taxes and excise duties;
- 2.15 **"sub-contract"** means the primary contractor's assigning, leasing, making out work to, or employing, another person to support such primary contractor in the execution of part of a project in terms of the contract;
- 2.16 **"total revenue"** bears the same meaning assigned to this expression in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act and promulgated in the *Government Gazette* on 9 February 2007;
- 2.17 **"trust"** means the arrangement through which the property of one person is made over or

bequeathed to a trustee to administer such property for the benefit of another person; and

- 2.18 **“trustee”** means any person, including the founder of a trust, to whom property is bequeathed in order for such property to be administered for the benefit of another person.

3. **ADJUDICATION USING A POINT SYSTEM**

- 3.1 The bidder obtaining the highest number of total points will be awarded the contract.
- 3.2 Preference points shall be calculated after prices have been brought to a comparative basis taking into account all factors of non-firm prices and all unconditional discounts;
- 3.3 Points scored must be rounded off to the nearest 2 decimal places.
- 3.4 In the event that two or more bids have scored equal total points, the successful bid must be the one scoring the highest number of preference points for B-BBEE.
- 3.5 However, when functionality is part of the evaluation process and two or more bids have scored equal points including equal preference points for B-BBEE, the successful bid must be the one scoring the highest score for functionality.
- 3.6 Should two or more bids be equal in all respects, the award shall be decided by the drawing of lots.

4. **POINTS AWARDED FOR PRICE**

4.1 **THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS**

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

90/10

$$P_s = 90 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where

P_s = Points scored for comparative price of bid under consideration

P_t = Comparative price of bid under consideration

$P_{\min}$ = Comparative price of lowest acceptable bid

5. **Points awarded for B-BBEE Status Level of Contribution**

- 5.1 In terms of Regulation 5 (2) and 6 (2) of the Preferential Procurement Regulations, preference points must be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (90/10 system)	Number of points (80/20 system)
1	10	20
2	9	18
3	8	16
4	5	12
5	4	8
6	3	6
7	2	4
8	1	2
Non-compliant contributor	0	0

- 5.2 Bidders who qualify as EMEs in terms of the B-BBEE Act must submit a certificate issued by an Accounting Officer as contemplated in the CCA or a Verification Agency accredited by SANAS or a Registered Auditor. Registered auditors do not need to meet the prerequisite for IRBA's approval for the purpose of conducting verification and issuing EMEs with B-BBEE Status Level Certificates.
- 5.3 Bidders other than EMEs must submit their original and valid B-BBEE status level verification certificate or a certified copy thereof, substantiating their B-BBEE rating issued by a Registered Auditor approved by IRBA or a Verification Agency accredited by SANAS.
- 5.4 A trust, consortium or joint venture, will qualify for points for their B-BBEE status level as a legal entity, provided that the entity submits their B-BBEE status level certificate.
- 5.5 A trust, consortium or joint venture will qualify for points for their B-BBEE status level as an unincorporated entity, provided that the entity submits their consolidated B-BBEE scorecard as if they were a group structure and that such a consolidated B-BBEE scorecard is prepared for every separate bid.
- 5.6 Tertiary institutions and public entities will be required to submit their B-BBEE status level certificates in terms of the specialized scorecard contained in the B-BBEE Codes of Good Practice.
- 5.7 A person will not be awarded points for B-BBEE status level if it is indicated in the bid documents that such a bidder intends sub-contracting more than 25% of the value of the contract to any other enterprise that does not qualify for at least the points that such a bidder qualifies for, unless the intended sub-contractor is an EME that has the capability and ability to execute the sub-contract.
- 5.8 A person awarded a contract may not sub-contract more than 25% of the value of the contract to any other enterprise that does not have an equal or higher B-BBEE status level than the person concerned, unless the contract is sub-contracted to an EME that has the capability and ability to execute the sub-contract.

6. BID DECLARATION

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

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

7.1 B-BBEE Status Level of Contribution: = (maximum of 10 or 20 points)

(Points claimed in respect of paragraph 7.1 must be in accordance with the table reflected in paragraph 5.1 and must be substantiated by means of a B-BBEE certificate issued by a Verification Agency accredited by SANAS or a Registered Auditor approved by IRBA or an Accounting Officer as contemplated in the CCA).

8 SUB-CONTRACTING

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

8.1.1 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)

9 DECLARATION WITH REGARD TO COMPANY/FIRM

9.1 Name of company/firm :

9.2 VAT registration number

9.3 Company registration number

9.4 TYPE OF COMPANY/ FIRM

Partnership/Joint Venture / Consortium
One person business/sole propriety
Close corporation
Company
(Pty) Limited

[TICK APPLICABLE BOX]

9.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

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

9.6 COMPANY CLASSIFICATION

Manufacturer
Supplier
Professional service provider
Other service providers, e.g. transporter, etc.

[TICK APPLICABLE BOX]

9.7 Total number of years the company/firm has been in business?

9.8 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-BBE status level of contribution indicated in paragraph 7 of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

- (i) The information furnished is true and correct;
- (ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form.
- (iii) In the event of a contract being awarded as a result of points claimed as shown in paragraph 7, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;
- (iv) If the B-BBE 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 –
 - (a) disqualify the person from the bidding process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
 - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
 - (d) 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 a period not exceeding 10 years, after the audi alteram partem (hear the other side) rule has been applied; and
 - (e) forward the matter for criminal prosecution

WITNESSES:

1.

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

2.

DATE:.....

ADDRESS:.....

.....

.....



DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

This Standard Bidding Document must form part of all bids invited.

It serves as a declaration to be used by institutions 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.

The bid of any bidder may be disregarded if that bidder, or any of its directors have-

abused the institution's supply chain management system;
committed fraud or any other improper conduct in relation to such system; or
failed to perform on any previous contract.

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 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 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.	☐	☐
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.	☐	☐

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 outside of the Republic of South Africa) for fraud or corruption during the past five years?	Yes ☐	No ☐
4.3.1	If so, furnish particulars:		
4.4	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?	Yes ☐	No ☐
4.4.1	If so, furnish particulars:		

SBD 8

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



CERTIFICATE OF INDEPENDENT BID DETERMINATION

- 1 This Standard Bidding Document (SBD) must form part of all bids¹ 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).² Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.
- 3 Treasury Regulation 16A9 prescribes that accounting officers and accounting authorities must take all reasonable steps to prevent abuse of the supply chain management system and authorizes accounting officers and accounting authorities to:
 - a) disregard the bid of any bidder if that bidder, or any of its directors have abused the institution's supply chain management system and or committed fraud or any other improper conduct in relation to such system.
 - b) cancel a contract awarded to a supplier of goods and services if the supplier committed any corrupt or fraudulent act during the bidding process or the execution of that contract.
- 4 This SBD 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 (SBD 9) must be completed and submitted with the bid:

¹ Includes price quotations, advertised competitive bids, limited bids and proposals.

² 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.

CERTIFICATE OF INDEPENDENT BID DETERMINATION

I, the undersigned, in submitting the accompanying bid:

(Bid Number and Description)

in response to the invitation for the bid made by:

(Name of Institution)

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

I certify, on behalf of: _____ that:
(Name of Bidder)

- 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:
 - (a) has been requested to submit a bid in response to this bid invitation;
 - (b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
 - (c) 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 consortium³ 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:
 - (a) prices;
 - (b) geographical area where product or service will be rendered (market allocation)
 - (c) methods, factors or formulas used to calculate prices;
 - (d) the intention or decision to submit or not to submit, a bid;
 - (e) the submission of a bid which does not meet the specifications and conditions of the bid; or
 - (f) 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.

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

- 10 I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to 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

Position

Name of Bidder

VENDOR MASTER MAINTENANCE



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

SAP

Version 2
3-Dec-07

PAGE 1 OF 2

OFFICE USE
ONLY

Created by

Authorised by

Date created
d d m m y y

Date authorised
d d m m y y

Section A: Office (DWAF) Requesting Vendor Master (For official use only)

Indicate with an X New Vendor Information ☐

Update Vendor Information ☐

Office

Official's Initials and Surname

Official's Signature

Telephone

Fax No.

OFFICE DATE STAMP

Section B: Personal Detail of Vendor

Registered Name of Vendor

SARS Office (If applicable)

Trade Name

VAT Number

Payment Term

Title if Applicable

Section C: Address of Vendor

Postal Address

Street Address

Postal Code

Postal Code

Section D: Telephone / Fax Numbers (Vendor Contact Details)

Contact Person (Vendor)

E-mail

Telephone Number - Area Code with Number

Fax Number

Mobile number

Preferred method of communication
(Please select only one)

Facsimile ☐

E-mail ☐

Post ☐

Section E: Vendor detail

Supplier Type: ☐ Individual ☐ Department ☐ Partnership
☐ Company ☐ Trust
☐ CC ☐ Other (Specify)

Supporting documentation must accompany this form

DEPARTMENT WATER AND SANITATION



1. VENDOR MASTER REGISTRATION AND MAINTENANCE

1.1 Supplier detail verification:

National Treasury has implemented an electronic verification system (Safety Web) to verify the banking details of all Vendors with the Commercial Banks.

This means that the Vendor details for verification must be exactly the same as the record of the Banks, e.g.:

a.) Individuals:

Details should not be recorded as "trading as", but as per the records of the particular Bank (*If the name of a vendor with the Bank is in a certain language, capture as it is with the Bank*);
ID number is a compulsory field for individuals (*The Banks do verify the ID number and reject the supplier details if this information is not included or incorrect*).

b.) Close Corporations:

The name must end with CC or BK;

Registration number ends with 23;

If verified details requires a CK in front or the back of the company registration number, e.g. CK1999/123456/23 or 1999/123456/23 CK it should be captured as such.

Estate Late:

Must have an ID number (If the account was not closed and a new account opened in Estate Late it will be the same as if the account was opened when the person was still alive.

Attorneys / Doctors

ID number (For individuals) or Company registration number (If registered as a CC).

c.) Companies:

Company registration details have to be captured with the slash (e.g. 1195/012564/07);
Use the table below as guideline.

Type of Entity	Company registration number	Wording that should appear in the name
Close Corporation	2000 / 000000 / 23	CC/BK
Private Company	2000 / 000000 / 07	Pty Ltd / Edms Bpk / Eiendoms Beperk / Proprietary Limited / Pty Limited / Proprietary Ltd / Edms Beperk / Eiendoms Bpk
Public Company	2000 / 000000 / 06	Ltd / Bpk / Beperk / Limited
Trust	ITOO/ 00	Not all Trusts have registration numbers and in such a case the ID number must be used.
Incorporated under Section 21	2000 / 000000 / 08	
Incorporated	2000 / 000000 / 21	Inc. ling

Before any details can be captured on Safetyweb, by Head Office for verification, the Vendor must provide the department with the banking details as captured and recorded with their banker. These details must be verified by the Bank against the following screens:

- FNB - information must be according to the HOGAN System on the CIS4
- NEDBANK - Banking Platform under the Client Details Tab
- ABSA - information as captured on the CIF screen
- Standard Bank - information as per look-up-screen

Please note that the Banks will not provide these screens to the Vendor / Department but will merely validate the Vendor's details against these screens.

1.2 Capturing of Vendor details:

Herewith some standard rules to comply with when capturing Vendor details:

- i. Do not leave spaces and use only numeric characters in the account number field.
- ii. Under no circumstances use the details on the cheque for verification of the name. Departments must verify the registered name of the company at the Bank.

1.3 Vendor master maintenance form:

The attached Vendor Master Maintenance form must be completed by Vendors, Contractors and all Departmental staff that will be incorporated into the Trading Account.

No alterations to the form will be accepted, and the form should not be scanned and e-mailed.

Section A:

To be completed by the relevant Department Water Affairs and Forestry Office.

Sections B, C, D and E:

The Vendor must complete all the required fields.

Section F:

The Vendor must complete all required fields. Take note that the section must be fully signed (initials and surname as well as signature) by the Vendor as well as the Bank Official (including bank stamp).

General:

Please note that each SAP Vendor Master form must be supported by **copies** of one of the following documentation:

Persal – Printout of function 4.3.1 (Enquiry: Specific Personal Particulars);
Individual – ID document;

Company – Tax Clearance certificate or CK1 or SARS notice of registration or Tax invoice with printed VAT-number. If not register for VAT an ID document of owner and signed declaration that the company is not registered for VAT.

Please ensure that all the fields are completed and that the information is clearly readable.

1.4 Payment terms:

The payment term defines the terms of cash discount percentages and payment methods.

The Vendor should indicate, in the space provided on the Vendor Master Maintenance Form what their payment terms are, e.g.:

Z007	Payable immediately Due net
Z001	Within 30 days Due net
Z010	Within 30 days 1.5% Discount
Z011	Within 30 days 2% Discount
Z012	Within 30 days 2.5% Discount

Other payment terms will be applied on an ad-hoc basis, but it is the responsibility of the relevant Regional Office / Construction Scheme to negotiate / inform their Vendors of this decision.

1.5 Contact persons:

All completed Vendor Master Maintenance Forms must be returned to the relevant Department Water and Sanitation.



GOVERNMENT PROCUREMENT

GENERAL CONDITIONS OF CONTRACT

NOTES

The purpose of this document is to:

- (i) Draw special attention to certain general conditions applicable to government bids, contracts and orders; and
- (ii) To ensure that clients be familiar with regard to the rights and obligations of all parties involved in doing business with government.

In this document words in the singular also mean in the plural and vice versa and words in the masculine also mean in the feminine and neuter.

- The General Conditions of Contract will form part of all bid documents and may not be amended.
- Special Conditions of Contract (SCC) relevant to a specific bid, should be compiled separately for every bid (if applicable) and will supplement the General Conditions of Contract. Whenever there is a conflict, the provisions in the SCC shall prevail.

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General Conditions of Contract

1. Definitions

1. The following terms shall be interpreted as indicated:
 - 1.1 "Closing time" means the date and hour specified in the bidding documents for the receipt of bids.
 - 1.2 "Contract" means the written agreement entered into between the purchaser and the supplier, as recorded in the contract form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
 - 1.3 "Contract price" means the price payable to the supplier under the contract for the full and proper performance of his contractual obligations.
 - 1.4 "Corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution.
 - 1.5 "Countervailing duties" are imposed in cases where an enterprise abroad is subsidized by its government and encouraged to market its products internationally.
 - 1.6 "Country of origin" means the place where the goods were mined, grown or produced or from which the services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembly of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components.
 - 1.7 "Day" means calendar day.
 - 1.8 "Delivery" means delivery in compliance of the conditions of the contract or order.
 - 1.9 "Delivery ex stock" means immediate delivery directly from stock actually on hand.
 - 1.10 "Delivery into consignees store or to his site" means delivered and unloaded in the specified store or depot or on the specified site in compliance with the conditions of the contract or order, the supplier bearing all risks and charges involved until the supplies are so delivered and a valid receipt is obtained.
 - 1.11 "Dumping" occurs when a private enterprise abroad market its goods on own initiative in the RSA at lower prices than that of the country of origin and which have the potential to harm the local industries in the RSA.
 - 1.12 "Force majeure" means an event beyond the control of the supplier and not involving the supplier's fault or negligence and not foreseeable. Such events may include, but is not restricted to, acts of the purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
 - 1.13 "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of any bidder, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the bidder of the benefits of free and open competition.
 - 1.14 "GCC" means the General Conditions of Contract.
 - 1.15 "Goods" means all of the equipment, machinery, and/or other materials that the supplier is required to supply to the purchaser under the contract.
 - 1.16 "Imported content" means that portion of the bidding price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or his subcontractors) and which costs are inclusive of the costs abroad, plus freight and other direct importation costs such as landing costs, dock dues, import duty, sales duty or other similar tax or duty at the South African place of entry as well as transportation and handling charges to the factory in the Republic where the supplies covered by the bid will be manufactured.
 - 1.17 "Local content" means that portion of the bidding price which is not included in the imported content provided that local manufacture does take place.
 - 1.18 "Manufacture" means the production of products in a factory using labour, materials, components and machinery and includes other related value-adding activities.

- 1.19 "Order" means an official written order issued for the supply of goods or works or the rendering of a service.
 - 1.20 "Project site," where applicable, means the place indicated in bidding documents.
 - 1.21 "Purchaser" means the organization purchasing the goods.
 - 1.22 "Republic" means the Republic of South Africa.
 - 1.23 "SCC" means the Special Conditions of Contract.
 - 1.24 "Services" means those functional services ancillary to the supply of the goods, such as transportation and any other incidental services, such as installation, commissioning, provision of technical assistance, training, catering, gardening, security, maintenance and other such obligations of the supplier covered under the contract.
 - 1.25 "Written" or "in writing" means handwritten in ink or any form of electronic or mechanical writing.
- 2. Application**
- 2.1 These general conditions are applicable to all bids, contracts and orders including bids for functional and professional services, sales, hiring, letting and the granting or acquiring of rights, but excluding immovable property, unless otherwise indicated in the bidding documents.
 - 2.2 Where applicable, special conditions of contract are also laid down to cover specific supplies, services or works.
 - 2.3 Where such special conditions of contract are in conflict with these general conditions, the special conditions shall apply.
- 3. General**
- 3.1 Unless otherwise indicated in the bidding documents, the purchaser shall not be liable for any expense incurred in the preparation and submission of a bid. Where applicable a non-refundable fee for documents may be charged.
 - 3.2 With certain exceptions, invitations to bid are only published in the Government Tender Bulletin. The Government Tender Bulletin may be obtained directly from the Government Printer, Private Bag X85, Pretoria 0001, or accessed electronically from www.treasury.gov.za
- 4. Standards**
- 4.1 The goods supplied shall conform to the standards mentioned in the bidding documents and specifications.
- 5. Use of contract documents and information; inspection**
- 5.1 The supplier shall not, without the purchaser's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the purchaser in connection therewith, to any person other than a person employed by the supplier in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.
 - 5.2 The supplier shall not, without the purchaser's prior written consent, make use of any document or information mentioned in GCC clause 5.1 except for purposes of performing the contract.
 - 5.3 Any document, other than the contract itself mentioned in GCC clause 5.1 shall remain the property of the purchaser and shall be returned (all copies) to the purchaser on completion of the supplier's performance under the contract if so required by the purchaser.
 - 5.4 The supplier shall permit the purchaser to inspect the supplier's records relating to the performance of the supplier and to have them audited by auditors appointed by the purchaser, if so required by the purchaser.
- 6. Patent rights**
- 6.1 The supplier shall indemnify the purchaser against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the goods or any part thereof by the purchaser.
- 7. Performance security**
- 7.1 Within thirty (30) days of receipt of the notification of contract award, the successful bidder shall furnish to the purchaser the performance security of the amount specified in SCC.
 - 7.2 The proceeds of the performance security shall be payable to the purchaser as compensation for any loss resulting from the supplier's failure to complete his

obligations under the contract.

- 7.3 The performance security shall be denominated in the currency of the contract, or in a freely convertible currency acceptable to the purchaser and shall be in one of the following forms:

- (a) a bank guarantee or an irrevocable letter of credit issued by a reputable bank located in the purchaser's country or abroad, acceptable to the purchaser, in the form provided in the bidding documents or another form acceptable to the purchaser; or
- (b) a cashier's or certified cheque

- 7.4 The performance security will be discharged by the purchaser and returned to the supplier not later than thirty (30) days following the date of completion of the supplier's performance obligations under the contract, including any warranty obligations, unless otherwise specified in SCC.

8. Inspections, tests and analyses

- 8.1 All pre-bidding testing will be for the account of the bidder.

- 8.2 If it is a bid condition that supplies to be produced or services to be rendered should at any stage during production or execution or on completion be subject to inspection, the premises of the bidder or contractor shall be open, at all reasonable hours, for inspection by a representative of the Department or an organization acting on behalf of the Department.

- 8.3 If there are no inspection requirements indicated in the bidding documents and no mention is made in the contract, but during the contract period it is decided that inspections shall be carried out, the purchaser shall itself make the necessary arrangements, including payment arrangements with the testing authority concerned.

- 8.4 If the inspections, tests and analyses referred to in clauses 8.2 and 8.3 show the supplies to be in accordance with the contract requirements, the cost of the inspections, tests and analyses shall be defrayed by the purchaser.

- 8.5 Where the supplies or services referred to in clauses 8.2 and 8.3 do not comply with the contract requirements, irrespective of whether such supplies or services are accepted or not, the cost in connection with these inspections, tests or analyses shall be defrayed by the supplier.

- 8.6 Supplies and services which are referred to in clauses 8.2 and 8.3 and which do not comply with the contract requirements may be rejected.

- 8.7 Any contract supplies may on or after delivery be inspected, tested or analysed and may be rejected if found not to comply with the requirements of the contract. Such rejected supplies shall be held at the cost and risk of the supplier who shall, when called upon, remove them immediately at his own cost and forthwith substitute them with supplies which do comply with the requirements of the contract. Failing such removal the rejected supplies shall be returned at the suppliers cost and risk. Should the supplier fail to provide the substitute supplies forthwith, the purchaser may, without giving the supplier further opportunity to substitute the rejected supplies, purchase such supplies as may be necessary at the expense of the supplier.

- 8.8 The provisions of clauses 8.4 to 8.7 shall not prejudice the right of the purchaser to cancel the contract on account of a breach of the conditions thereof, or to act in terms of Clause 23 of GCC.

9. Packing

- 9.1 The supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing, case size and weights shall take into consideration, where appropriate, the remoteness of the good's final destination and the absence of heavy handling facilities at all points in transit.

- 9.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the contract, including additional requirements, if any, specified in SCC, and in any

subsequent instructions ordered by the purchaser.

- | | | |
|-----------------------------------|------|--|
| 10. Delivery and documents | 10.1 | Delivery of the goods shall be made by the supplier in accordance with the terms specified in the contract. The details of shipping and/or other documents to be furnished by the supplier are specified in SCC. |
| | 10.2 | Documents to be submitted by the supplier are specified in SCC. |
| 11. Insurance | 11.1 | The goods supplied under the contract shall be fully insured in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the SCC. |
| 12. Transportation | 12.1 | Should a price other than an all-inclusive delivered price be required, this shall be specified in the SCC. |
| 13. Incidental services | 13.1 | The supplier may be required to provide any or all of the following services, including additional services, if any, specified in SCC: <ul style="list-style-type: none">(a) performance or supervision of on-site assembly and/or commissioning of the supplied goods;(b) furnishing of tools required for assembly and/or maintenance of the supplied goods;(c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied goods;(d) performance or supervision or maintenance and/or repair of the supplied goods, for a period of time agreed by the parties, provided that this service shall not relieve the supplier of any warranty obligations under this contract; and(e) training of the purchaser's personnel, at the supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied goods; |
| | 13.2 | Prices charged by the supplier for incidental services, if not included in the contract price for the goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the supplier for similar services. |
| 14. Spare parts | 14.1 | As specified in SCC, the supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the supplier: <ul style="list-style-type: none">(a) such spare parts as the purchaser may elect to purchase from the supplier, provided that this election shall not relieve the supplier of any warranty obligations under the contract; and(b) in the event of termination of production of the spare parts:<ul style="list-style-type: none">(i) advance notification to the purchaser of the pending termination, in sufficient time to permit the purchaser to procure needed requirements; and(ii) following such termination, furnishing at no cost to the purchaser, the blueprints, drawings, and specifications of the spare parts, if requested. |
| 15. Warranty | 15.1 | The supplier warrants that the goods supplied under the contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the contract. The supplier further warrants that all goods supplied under this contract shall have no defect, arising from design, materials, or workmanship except when the design and/or material is required by the purchaser's specifications) or from any act or omission of the supplier, that may develop under normal use of the supplied goods in the conditions prevailing in the country of final destination. |
| | 15.2 | This warranty shall remain valid for twelve (12) months after the goods, or any |

- portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the contract, or for eighteen (18) months after the date of shipment from the port or place of loading in the source country, whichever period concludes earlier, unless specified otherwise in SCC.
- 15.3 The purchaser shall promptly notify the supplier in writing of any claims arising under this warranty.
- 15.4 Upon receipt of such notice, the supplier shall, within the period specified in SCC and with all reasonable speed, repair or replace the defective goods or parts thereof, without costs to the purchaser.
- 15.5 If the supplier, having been notified, fails to remedy the defect(s) within the period specified in SCC, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expense and without prejudice to any other rights which the purchaser may have against the supplier under the contract.
- 16. Payment**
- 16.1 The method and conditions of payment to be made to the supplier under this contract shall be specified in SCC.
- 16.2 The supplier shall furnish the purchaser with an invoice accompanied by a copy of the delivery note and upon fulfilment of other obligations stipulated in the contract.
- 16.3 Payments shall be made promptly by the purchaser, but in no case later than thirty (30) days after submission of an invoice or claim by the supplier.
- 16.4 Payment will be made in Rand unless otherwise stipulated in SCC.
- 17. Prices**
- 17.1 Prices charged by the supplier for goods delivered and services performed under the contract shall not vary from the prices quoted by the supplier in his bid, with the exception of any price adjustments authorized in SCC or in the purchaser's request for bid validity extension, as the case may be.
- 18. Contract amendments**
- 18.1 No variation in or modification of the terms of the contract shall be made except by written amendment signed by the parties concerned.
- 19. Assignment**
- 19.1 The supplier shall not assign, in whole or in part, its obligations to perform under the contract, except with the purchaser's prior written consent.
- 20. Subcontracts**
- 20.1 The supplier shall notify the purchaser in writing of all subcontracts awarded under this contract if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the supplier from any liability or obligation under the contract. The recommended bidder will be required to submit the letter of authority after 14 days of the award.
- 21. Delays in the supplier's performance**
- 21.1 Delivery of the goods and performance of services shall be made by the supplier in accordance with the time schedule prescribed by the purchaser in the contract.
- 21.2 If at any time during performance of the contract, the supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the goods and performance of services, the supplier shall promptly notify the purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the supplier's notice, the purchaser shall evaluate the situation and may at his discretion extend the supplier's time for performance, with or without the imposition of penalties, in which case the extension shall be ratified by the parties by amendment of contract.
- 21.3 No provision in a contract shall be deemed to prohibit the obtaining of supplies or services from a national department, provincial department, or a local authority.
- 21.4 The right is reserved to procure outside of the contract small quantities or to have minor essential services executed if an emergency arises, the supplier's point of supply is not situated at or near the place where the supplies are required, or the supplier's services are not readily available.
- 21.5 Except as provided under GCC Clause 25, a delay by the supplier in the performance of its delivery obligations shall render the supplier liable to the imposition of penalties, pursuant to GCC Clause 22, unless an extension of time is agreed upon pursuant to GCC Clause 21.2 without the application of penalties.
- 21.6 Upon any delay beyond the delivery period in the case of a supplies contract, the purchaser shall, without cancelling the contract, be entitled to purchase supplies of

a similar quality and up to the same quantity in substitution of the goods not supplied in conformity with the contract and to return any goods delivered later at the supplier's expense and risk, or to cancel the contract and buy such goods as may be required to complete the contract and without prejudice to his other rights, be entitled to claim damages from the supplier.

22. Penalties

- 22.1 Subject to GCC Clause 25, if the supplier fails to deliver any or all of the goods or to perform the services within the period(s) specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services using the current prime interest rate calculated for each day of the delay until actual delivery or performance. The purchaser may also consider termination of the contract pursuant to GCC Clause 23.

23. Termination for default

- 23.1 The purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate this contract in whole or in part:
- (a) if the supplier fails to deliver any or all of the goods within the period(s) specified in the contract, or within any extension thereof granted by the purchaser pursuant to GCC Clause 21.2;
 - (b) if the Supplier fails to perform any other obligation(s) under the contract; or
 - (c) if the supplier, in the judgment of the purchaser, has engaged in corrupt or fraudulent practices in competing for or in executing the contract.
- 23.2 In the event the purchaser terminates the contract in whole or in part, the purchaser may procure, upon such terms and in such manner as it deems appropriate, goods, works or services similar to those undelivered, and the supplier shall be liable to the purchaser for any excess costs for such similar goods, works or services. However, the supplier shall continue performance of the contract to the extent not terminated.
- 23.3 Where the purchaser terminates the contract in whole or in part, the purchaser may decide to impose a restriction penalty on the supplier by prohibiting such supplier from doing business with the public sector for a period not exceeding 10 years.
- 23.4 If a purchaser intends imposing a restriction on a supplier or any person associated with the supplier, the supplier will be allowed a time period of not more than fourteen (14) days to provide reasons why the envisaged restriction should not be imposed. Should the supplier fail to respond within the stipulated fourteen (14) days the purchaser may regard the intended penalty as not objected against and may impose it on the supplier.
- 23.5 Any restriction imposed on any person by the Accounting Officer / Authority will, at the discretion of the Accounting Officer / Authority, also be applicable to any other enterprise or any partner, manager, director or other person who wholly or partly exercised or may exercise control over the enterprise of the first mentioned person, is or was in the opinion of the Accounting Officer / Authority actively associated.
- 23.6 If a restriction is imposed, the purchaser must, within five (5) working days of such imposition, furnish the National Treasury, with the following information:
- (i) the name and address of the supplier and / or person restricted by the purchaser;
 - (ii) the date of commencement of the restriction;
 - (iii) the period of restriction; and
 - (iv) the reasons for the restriction
- These details will be loaded in the National Treasury's central database of suppliers or persons prohibited from doing business with the public sector.
- 23.7 If a court of law convicts a person of an offence as contemplated in sections 12 or 13 of the Prevention and Combating of Corrupt Activities Act, No 12 of 2004, the court may also rule that such person's name be endorsed on the Register for Tender Defaulters. When a person's name has been endorsed on the Register, the person will be prohibited from doing business with the public sector for a period of not less than five years and not more than 10 years. The National Treasury is

empowered to determine the period of restriction and each case will be dealt with on its own merits. According to section 32 of the Act the Register must be open to the public. The Register can be perused on the National Treasury website.

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| 24. Anti-dumping and countervailing duties and rights | 24.1 | When, after the date of bid, provisional payments are required, or anti-dumping or countervailing duties are imposed, or the amount of a provisional payment or anti-dumping or countervailing right is increased in respect of any dumped or subsidized import, the State is not liable for any amount so required or imposed, or for the amount of any such increase. When, after the said date, such a provisional payment is no longer required or any such anti-dumping or countervailing right is abolished, or where the amount of such provisional payment or any such right is reduced, any such favourable difference shall on demand be paid forthwith by the contractor to the State or the State may deduct such amounts from moneys (if any) which may otherwise be due to the contractor in regard to supplies or services which he delivered or rendered, or is to deliver or render in terms of the contract or any other contract or any other amount which may be due to him. |
| 25. Force Majeure | 25.1 | Notwithstanding the provisions of GCC Clauses 22 and 23, the supplier shall not be liable for forfeiture of its performance security, damages, or termination for default if and to the extent that his delay in performance or other failure to perform his obligations under the contract is the result of an event of force majeure. |
| | 25.2 | If a force majeure situation arises, the supplier shall promptly notify the purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the force majeure event. |
| 26. Termination for insolvency | 26.1 | The purchaser may at any time terminate the contract by giving written notice to the supplier if the supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the purchaser. |
| 27. Settlement of Disputes | 27.1 | If any dispute or difference of any kind whatsoever arises between the purchaser and the supplier in connection with or arising out of the contract, the parties shall make every effort to resolve amicably such dispute or difference by mutual consultation. |
| | 27.2 | If, after thirty (30) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the purchaser or the supplier may give notice to the other party of his intention to commence with mediation. No mediation in respect of this matter may be commenced unless such notice is given to the other party. |
| | 27.3 | Should it not be possible to settle a dispute by means of mediation, it may be settled in a South African court of law. |
| | 27.4 | Mediation proceedings shall be conducted in accordance with the rules of procedure specified in the SCC. |
| | 27.5 | Notwithstanding any reference to mediation and/or court proceedings herein, |
| | (a) | the parties shall continue to perform their respective obligations under the contract unless they otherwise agree; and |
| | (b) | the purchaser shall pay the supplier any monies due the supplier. |
| 28. Limitation of liability | 28.1 | Except in cases of criminal negligence or wilful misconduct, and in the case of infringement pursuant to Clause 6; |
| | (a) | the supplier shall not be liable to the purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the supplier to pay penalties and/or damages to the purchaser; and |
| | (b) | the aggregate liability of the supplier to the purchaser, whether under the |

contract, in tort or otherwise, shall not exceed the total contract price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.

- | | | |
|--|------|--|
| 29. Governing language | 29.1 | The contract shall be written in English. All correspondence and other documents pertaining to the contract that is exchanged by the parties shall also be written in English. |
| 30. Applicable law | 30.1 | The contract shall be interpreted in accordance with South African laws, unless otherwise specified in SCC. |
| 31. Notices | 31.1 | Every written acceptance of a bid shall be posted to the supplier concerned by registered or certified mail and any other notice to him shall be posted by ordinary mail to the address furnished in his bid or to the address notified later by him in writing and such posting shall be deemed to be proper service of such notice. |
| | 31.2 | The time mentioned in the contract documents for performing any act after such aforesaid notice has been given, shall be reckoned from the date of posting of such notice. |
| 32. Taxes and duties | 32.1 | A foreign supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the purchaser's country. |
| | 32.2 | A local supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted goods to the purchaser. |
| | 32.3 | No contract shall be concluded with any bidder whose tax matters are not in order. Prior to the award of a bid the Department must be in possession of a tax clearance certificate, submitted by the bidder. This certificate must be an original issued by the South African Revenue Services. |
| 33. National Industrial Participation (NIP) Programme | 33.1 | The NIP Programme administered by the Department of Trade and Industry shall be applicable to all contracts that are subject to the NIP obligation. |
| 34. Prohibition of Restrictive Practices | 34.1 | In terms of section 4 (1) (b)(iii) of the Competition Act No 89 of 1998, as amended, an agreement between, or concerted practice by, firms, or a decision by an association of firms, is prohibited if it is between parties in a horizontal relationship and if a bidder(s) is/are or a contractor(s) was/were involved in collusive bidding (or bid rigging). |
| | 34.2 | If a bidder(s) or contractor(s), based on reasonable grounds or evidence obtained by the purchaser, has/have engaged in the restrictive practice referred to above, the purchaser may refer the matter to the Competition Commission for investigation and possible imposition of administrative penalties as contemplated in the Competition Act No 89 of 1998. |
| | 34.3 | If a bidder(s) or contractor(s), has/have been found guilty by the Competition Commission of the restrictive practice referred to above, the purchaser may, in addition and without prejudice to any other remedy provided for, invalidate the bid(s) for such item(s) offered, and/or terminate the contract in whole or part, and/or restrict the bidder(s) or contractor(s) from conducting business with the public sector for a period not exceeding ten (10) years and/or claim damages from the bidder(s) or contractor(s) concerned. |

PERFORMANCE GUARANTEE

BID No W XXX WTE.....

WHEREAS..... (hereinafter referred to as 'the Employer') entered
into, on the day of a Contract with
..... (hereinafter called "the Contractor") for the
construction of
at

AND WHEREAS it is provided by such Contract that the Contractor shall provide the Employer with security by way of
suretyship for the due and faithful fulfillment of such Contract by the Contractor;

AND WHEREAS
has / have at the request of the Contractor, agreed to give such security;

NOW THEREFORE WE,
do hereby guarantee and bind ourselves jointly and severally as Sureties and Co-principal Debtors to the Employer
under renunciation of the benefits of division and excussion for the due and faithful performance by the Contractor of all
the terms and conditions of the said Contract, subject to the following conditions:

1. The Employer shall, without reference and / or notice to us, have complete liberty of action to act in any manner
authorized and / or contemplated by the terms of the said Contract, and / or to agree to any modifications,
variations, alterations, directions or extensions of the Due Completion Date of the Works under the said Contract,
and that its rights under this guarantee shall in no way be prejudiced nor our liability hereunder be affected by
reason of any steps which the Employer may take under such Contract, or of any modification, variation, alterations
of the Due Completion Date which the Employer may make, give, concede or agree to under the said Contract.
2. The Employer shall be entitled, without reference to us, to release any securities held by it, and to give time to or
compound or make any other arrangement with the Contractor.
3. This guarantee shall remain in full force and effect until the issue of the Certificate of Completion in terms of the
Contract, unless we are advised in writing by the Employer before the issue of the said Certificate of his intention to
institute claims, and the particulars thereof, in which event this guarantee shall remain in full force and effect until all
such claims have been paid or liquidated.
4. Our total liability hereunder shall not exceed the sum of
..... (R)
5. We hereby choose domicilium citandi et executandi for all purposes arising hereof at

IN WITNESS WHEREOF this guarantee has been executed by us at
on this day of 20

As witnesses:

Signature:

Duly authorized to sign on behalf of

1.

Address

2.

FORM OF BID

Contract No. DWS 52-0816 WTE

for the
.....

To(Name of Employer)

Gentlemen,

Having examined the General and the Special Conditions of Contract, Specifications, Drawings and Schedule of Quantities for the construction of the above named Works, I/We offer to construct, complete and remedy any defects in the said Works in conformity with the General and Special Conditions of Contract, Specifications, Drawings and Schedule of Quantities, save as amended by the Alterations by Bidder (if any), for the sum of

R.....

....

or such other sum as may be ascertained in accordance with the terms of the Contract.

In the event of there being any errors of extension or addition in the priced Schedule of Quantities, I/We agree to their being corrected by you or by the Engineer acting on your behalf, the rates being taken as correct.

I/We undertake to complete and deliver the whole of the Works comprised in the Contract within the time stated in the Appendix adjusted in terms of the Contract.

My/our* Bided Price is firm/not firm*.

If my/our Bid is accepted, I/We will, when required and within the time stipulated, provide a guarantee of an Insurance Company or a Bank* (to be approved by you) to be jointly and severally bound with me/us for the amount stated in the Appendix for the due performance of the Contract under the terms of a Deed of Surety ship in the form annexed hereto.

The Surety I/We propose is

of

Unless and until a formal Agreement is prepared and executed, this Bid, together with the written acceptance thereof by yourselves or the Engineer acting on your behalf, shall constitute a binding Contract between us.

I/We understand that you are not bound to accept the lowest or any Bid you may receive.

Yours faithfully

Signature

.....

Duly authorised to sign on behalf of

.....

Address

.....

.....

Date.....

Telephone

No.....

*Bidder to delete whichever is not applicable

APPENDIX AND CONDITIONS OF CONTRACT CIVIL

	Clause
Special conditions.....	See Special Conditions of Contract
Address of Employer	Sedibeng Building 185 Francis Baard Street PRETORIA 0002
Address and telephone number of Engineer....	The detail will be finalised after the closing Date of the Bid
Address and telephone number of Contractor.	.....
Amount of Surety ship.....10	a) For contracts with a value in excess of R3 million the amount of surety ship shall be 10% of the contract amount. b) For contracts with a value equal or less than R3 million the amount of surety ship shall be as follows: The greater value OF Value of fixed charge and value related items in Schedule of Quantities. OR If value of contract is R150 000 or less: 0%. If value of contract is more than R150 000 but less than R1 million: 2,5% of the contract amount If value of contract is equal or more than R1 million but less or equal to R3 million: 5% of the contract amount.
Time within which Surety to be provided.....10	14 days from the Commencement Date
Duration of Surety ship.....10	Until issue of Certificate of Completion
Time within which Works to be commenced....	14 days after the Commencement Date
Programme to be furnished within.....	14 days after receipt of Letter of Acceptance
Special Risks insurance.....	Not required
Minimum amount of Liability Insurance.....	R1 000 000
Daywork allowances.....	**.....per cent on the gross remuneration of the workmen and foremen actually engaged **.....per cent on net cost of materials actually used
Special non-working days.....41	16 December to 5 January (both days included) plus South African Statutory Public Holidays
Time for Completion (Employers target) PS.....	2 years
Time for Completion (Bidders offer)	years
Amount of penalty.....	1/14% of Contract Amount per calendar day
Percentage advance on material not yet built	

into the Permanent Works.....	80% but not more than 10% of Contract Amount
Percentage retention.....	10 per cent
Limit of retention money.....	No limit
Retention Money Guarantee.....	Not permitted
Delivery of Contractor's final statement.....	Within 28 days after certified date of completion of Works
Defects Liability Period.....	12 months
Settlement of disputes to be by reference to....	Court
Contract Price Adjustment	SPCC(7)
	If the duration of Contract is 6 months or shorter, the Contract Price irrespective of the amount involved shall be fixed and NO price adjustment shall be considered. In respect of all contracts amounting to R1 000 000,00 and less for civil engineering services (works), R500 000,00 and less for building services (works) and R50 000,00 and less for electrical and mechanical services, the contract price shall be fixed irrespective of the duration of contract.

Contract Price Adjustment Schedule

Coefficients for calculating Contract Price Adjustment Factor

x = 0,15 a = 0,3 b = 0,2 c = 0,3 d = 0,2

Price variation of special materials: ** See Clause 49(3)

Special materials, items or portions of the Works concerned	Method by which variation shall be determined	Rate or price for the base month

Period of validity of Bid : 120 days from closing date for submission of Bids.

DATE

Signature.....

On behalf of.....

.....

Notes: * Engineer to delete whichever is not applicable

** Bidder to enter relevant information.

All other information required in the Appendix to be entered by the Engineer.

AGREEMENT

Contract No.: BID DWS 52-0816 WTE

THIS AGREEMENT made between DEPARTMENT: WATER AND SANITATION OF PRIVATE BAG X313, PRETORIA, 0001 (thereinafter referred to as "the Employer") of the one part and of (thereinafter referred to as "the Contractor") of the other part.

WHEREAS the Employer is desirous that certain Works should be constructed, viz and has accepted a Bid by the Contractor for the construction, completion and defects correction of such Works.

NOW THIS AGREEMENT WITNESSES that:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the General Conditions of Contract hereinafter referred to:
2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz
 - (a) The said Bid and Appendix;
 - (b) The General and Special Conditions of Contract;
 - (c) The Specifications;
 - (d) The priced Schedule of Quantities;
 - (e) The Appendices and Annexure to the Bid Documents;
 - (f) The Drawings;
 - (g) The Letter of Acceptance;
 - (h) Other (stipulate)
3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned the Contractor undertakes to the Employer to construct, complete and remedy any defects in the Works in conformity in all respects with the provisions of the Contract.
4. The Employer hereby undertakes to pay to the Contractor in consideration of the construction, completion and defects correction of the Works the Contract Price at the times and in the manner prescribed by the Contract.

Signed in the presence of the subscribing witnesses:

At for and on behalf of the Employer on this day of 20.....

As witnesses:

1. Signature
2. Capacity

At for and on behalf of the Employer on this day of 20.....

As witnesses:

1. Signature
2. Capacity

DEED OF SURETY SHIP

Contract No.

WHEREAS (hereinafter referred to as "the Employer") entered into, on the day of a Contract with (hereinafter called "the Contractor") for the construction of at

AND WHEREAS it is provided by such Contract that the Contractor shall provide the Employer with security by way of surety ship for the due and faithful fulfilment of such Contract by the Contractor.

NOW THEREFORE WE do hereby guarantee and bind ourselves jointly and severally as Sureties and Co-principal Debtors to the Employer under renunciation of the benefits of division and excursion for the due and faithful performance by the Contractor of all the terms and conditions of the said Contract, subject to the following conditions:

1. The Employer shall, without reference and/or notice to us, have complete liberty of action to act in any manner authorised and/or contemplated by the terms of the said Contract, and/or to agree to any modifications, variations, alterations, directions or extensions of the Due Completion Date of the Works under the said Contract, and that its rights under this guarantee shall in no way be prejudiced nor our liability hereunder be affected by reason of any steps which the Employer may take under such Contract, or of any modification, variation, alterations of the Due Completion Date which the Employer may make, give, concede or agree to under the said Contract.
2. The Employer shall be entitled, without reference to us, to release any securities held by it, and to give time to or compound or make any other arrangement with the Contractor.
3. This guarantee shall remain in full force and effect until the issue of the Certificate of Completion in terms of the Contract, unless we are advised in writing by the Employer before the issue of the said Certificate of his intention to institute claims, and the particulars thereof, in which event this guarantee shall remain in full force and effect until all such claims have been paid or liquidated.
4. Our total liability hereunder shall not exceed the sum of (R.....).
5. We hereby choose domicilium citandi et executandi for all purposes arising hereof at

IN WITNESS WHEREOF this guarantee has been executed by us at on this day of 20.....

As witnesses:

Signature

Duly authorised to sign on behalf of

1.

.....

Address

2.

.....

AGREEMENT IN TERMS OF SECTION 27(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, NO. 85 OF 1993

The Employer and the Contractor hereby agree, in terms of the provisions of Section 27(2) of the Occupational Health and Safety, Act No. 85 of 1993, hereinafter referred to as 'the Act', that the Contractor as an employer in its own right and in its capacity as contractor for the execution of the works, shall have certain obligations and that the following arrangements shall apply between them to ensure compliance by the Contractor with the provisions of the Act, namely:-

- i) The Contractor undertakes to acquaint the appropriate officials and the employees of the Contractor with all relevant provisions of the Act, and the regulations promulgated in terms of the Act, and
- ii) The Contractor undertake that all relevant duties, obligations and prohibitions imposed in terms of the Act and regulations will be fully complied with, and
- iii) The Contractor hereby accepts sole liability for such due compliance with the relevant duties, obligations and prohibitions imposed by the Act and regulations and expressly absolves the Employer and the Employer's consulting engineers from being obliged to comply with any of the aforesaid duties, obligations and prohibitions.
- iv) The Contractor shall be obliged to report forthwith to the Employer any investigation, complaint, or criminal charge which may arise as a consequence of the provisions of the Act and regulations pursuant to work performed on behalf of the Employer, and shall, on written demand, provide full details in writing of such investigation, complaint or criminal charge.

SIGNED at On this day of 20.....

For and on behalf of the Contractor: Name

Company Name:

AS WITNESSES:

1. _____

2. _____

for and on behalf of the Employer:

AS WITNESSES:

1. _____

2. _____



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

FORM OF OFFER AND ACCEPTANCE

OFFER

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

THREE (3) YEAR TERM CONTRACT FOR THE EQUIPPING OF BOREHOLES NATIONWIDE.

The Bidder, identified in the offer signature block, has examined the documents listed in the Bid Data and addenda thereto as listed in the Bid forms and schedules, and by submitting this offer has accepted the Conditions of Contract.

By the representative of the Bidder, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance, the Bidder 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

.....

..... Rand (in words); R (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 Bidder before the end of the period of validity stated in the Bid Data, whereupon the Bidder becomes the party named as the Contractor in the Conditions of Contract identified in the Contract Data.

Signature(s) _____

Name(s) _____

Capacity _____

for the Bidder _____

(Name and address of organisation)

Name & signature of witnesses:

Date:

Witness 1 _____

Witness 2 _____

ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the Bidder'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 Bidder's offer shall form an agreement, between the Employer and the Bidder upon the terms and conditions contained in this Agreement and in the Contract that is the subject of this Agreement.

The terms of the contract, are contained in

- Part 1 Standard Bidding Documents
- Part 2 Conditions of Contract
- Part 3 Bid Technical Specification and Requirements
- Part 4 Bid Price Schedules
- Part 5 Questionnaire and Evaluation Criteria

and drawings and documents or parts thereof, which may be incorporated by reference into Sections 3 to 4 .

Deviations from and amendments to the documents listed in the Bid Data and any addenda thereto listed in the Bid schedules as well as any changes to the terms of the offer agreed by the Bidder 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.

The Bidder 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. Failure to fulfil 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 the Bidder receives one fully completed original copy of this document, including the schedule of deviations (if any). Unless the Bidder (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.

Signature(s) _____

Name(s) _____

Capacity _____

for the Employer _____
(Name and address of organisation)

Name & signature of witnesses:

Date:

Witness 1 _____

Witness 2 _____

SCHEDULE OF DEVIATIONS

Notes :

1. The extent of deviations from the Bid documents issued by the Employer prior to the Bid closing date is limited to those permitted in terms of the Conditions of Bid;
2. A Bidder'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 Bid 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 Bid 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 Agreement, the Employer and the Bidder agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to the documents listed in the Bid Data and addenda thereto as listed in the Bid schedules, as well as any confirmation, clarification or change to the terms of the offer agreed by the Bidder 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 Bid documents and the receipt by the Bidder of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this Agreement.

FOR THE EMPLOYER

Signature(s) _____

Name(s) _____

Capacity _____

for the Employer _____

(Name and address of organisation)

Name & signature of witnesses:

Date:

Witness 1 _____

Witness 2 _____

FOR THE BIDDER:

Signature(s) _____

Name(s) _____

Capacity _____

for the Bidder _____

(Name and address of organisation)

Name & signature of witnesses:

Date:

Witness 1 _____

Witness 2 _____

END OF SECTION

(Refer to instructions to Bidders)

If no departures or modifications are desired, the schedule hereunder is to be marked NIL and signed by the Bidder.

[illegible]

COMPANY NAME: _____

SIGNATURE OF BIDDER: _____

DATE: _____

SPECIALISED CONTRACTOR

SCHEDULE OF SIMILAR WORK UNDERTAKEN BY BIDDER

The Bidder shall, in the schedule hereunder, list all work of a similar nature to that contained in this Contract which has been carried out by him during the past five years and/or which is at present being carried out by him.

[illegible]

NOTE: IF NO SIMILAR WORK HAS BEEN CARRIED OUT, THE ABOVE SCHEDULE IS TO BE MARKED "NIL" BY THE BIDDER

NAME OF BIDDER: _____ COMPANY NAME: _____

SIGNATURE OF BIDDER: _____

DATE: _____

SPECIALISED CONTRACTOR

The Bidder shall, in the schedule hereunder, list all work of a similar nature to that contained in this Contract which has been carried out by him during the past five years and/or which is at present being carried out by him.

[illegible]

DATE: _____

SPECIALISED CONTRACTOR

The Bidder shall, in the schedule hereunder, list all work of a similar nature to that contained in this Contract which has been carried out by him during the past five years and/or which is at present being carried out by him.

[illegible]

NAME OF BIDDER: _____ COMPANY NAME: _____

DATE: _____

IMPORTANT NOTE: EACH SUB-CONTRACTOR MUST SUBMIT HIS ORIGINAL VALID TAX CLEARANCE CERTIFICATE WITH THIS BID. REFER TO FORM SBD 3.2.

BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SECTION 1

INFORMATION PROVIDED TO BIDDER

BID NO. DWS 52-0816 WTE**RURAL COMMUNITY WATER SUPPLY AND SERVICES****EQUIPPING OF BOREHOLES NATIONWIDE****INFORMATION PROVIDED TO BIDDER****1. PARTICULARS OF BID ENQUIRY**

Bids are invited for the equipping of boreholes nationwide.

2. THE WORKS WILL BE EXECUTED BY MEANS OF "MECHANICAL" AND/OR LABOUR BASED METHODS

- 2.1 Equipping of tested boreholes with pumps and power units as detailed in the document.
- 2.2 Erection of pump houses and appurtenant works.
- 2.3 Construction of rudimentary water distribution systems.
- 2.4 Construction of secondary reticulation systems.
- 2.5 Construction/erection of storage facilities associated with paragraph 2.3 above.

3. ADJUDICATION

- 3.1 The Bidder shall complete the price schedules for each province and the Department reserves the right to award the contract to different Bidders for each province.
- 3.2 This Bid will be adjudicated based upon the offers received for the complete list of price schedules. The contract will be awarded for the complete list of Price schedules.
- 3.3 Only complete offers will be considered. Incomplete offers for any part of the price schedules will not be adjudicated, "Rate Only" Schedules must also be completed in full.
- 3.4 Only one province will be awarded to the lowest Bidder

Note: It is required that all Bidders indicated their own province priority for the group of price schedules they prefer to work.

- * The Departmental goal is to appoint 5 (five) or more contractors for each province.

-
- 3.5(a) The Employer may also be required to make use of the services of the contractors appointed in other provinces, nor providing a reason for requiring that specific service.
- (b) The Employer is also not bound to only utilise the services provided by the contractor appointed in his province.
- (c) The Departmental Construction or other staff from other Departments may also be utilised for specific services when required on a "cost recovery appointment" (non-profitable basis).
- (d) The Department may also issue orders/payments when required to nominated contractor/specialised. The Department will then issue a separate order to the responsible Bidder for the mark-up rate portion as per Bid conditions.
- (e) The Departmental Construction will also utilise the contract for their projects.

4. IMPORTANT INFORMATION

- 4.1 The Department reserves the right to deal with the Contractor and his principals throughout the duration of the contract.
- 4.2 The services are required for a period of three years from the date of award and no specific quantity of work has been identified. Orders will be placed as required by the Regional Offices, DWS Construction, Implementing Agents, Local Government and the Municipalities nationwide over the 3-year period.

5. ADJUDICATION

- 5.1 Bids shall hold good and remain valid for acceptance for a period of 120 days commencing as from the closing time and date for Bid offers.
- 5.2 The Employer reserves the right to adjust any arithmetical or other patent errors in the Bid. Any adjustments in this respect made by the Engineer to the Bid will be communicated to the Bidder prior to the acceptance of the Bid.
- 5.3 The Employer does not bind himself to accept the lowest or any Bid nor to assign any reason for the rejection of a Bid and may if he so desires divide the Contract between any two or more Bidders and will not be held liable for any expense incurred in submitting Bids.

END OF SECTION 1

BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SECTION 2

IMPORTANT INFORMATION

BID NO. DWS 52-0816 WTE**RURAL COMMUNITY WATER SUPPLY AND SERVICES****EQUIPPING OF BOREHOLES NATIONWIDE****IMPORTANT INFORMATION****INDEX**

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4.	Alternatives.....	5
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BID NO. DWS 52-0816 WTE
RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES
EQUIPPING OF BOREHOLES NATIONWIDE
IMPORTANT INFORMATION

1. FORM OF CONTRACT AND SUBCONTRACT

- (a) The successful Bidders will be the Principal Contractors for Contract DWS 52-0816 WTE. **Should the project specifications and the schedule of quantities provide for certain portions of the works to be undertaken by specialists nominated by the Employer, (Agent, Contractor, Engineer or Engineer appointed as agent by the Employer) or by the Engineer acting as agent of the Employer, then the Principal Contractor shall be responsible for employing such subcontractors as are nominated by the Employer (or by the Engineer as its agent) for the respective portions of the works that are described in the Project Specifications and in the schedule of quantities.** The Employer will call separately for Bids for the nominated subcontract works, either before or during the duration for the contract in accordance with the approved construction programme of the Principal Contractor. The successful Bidders under these separate enquiries will be nominated as subcontractors to the Principal Contractor for the respective portions of the works involved. Subsequent to nomination, each specific nominated subcontractor will be required to enter into a subcontract agreement with the Principal Contractor in terms of the general conditions of contract. The nominated subcontractor will be bound, *mutatis mutandis*, by the same general and special conditions of contract as the Principal Contractor will be under this contract, except as may be specifically indicated otherwise in this document. Bidders for the Principal Contract should carefully examine the general conditions, as well as the special conditions of contract that are included in section 3 of this document, in order to establish the contractual arrangements that will govern nominated subcontracts to the Principal Contract.
- (b) The Departmental Construction or any other staff from other Departments may also be utilised or participate for specific services when required on a “cost recovery” appointment. (Non Profitable Basis).
- (c) The Department may also issue orders/payments when required to a nominated contractor/specialised. The Department will then issue a separate order to the responsible Bidder for the mark-up rate portion as per Bid conditions.

2. AUTHORITY OF SIGNATORY

If the Bidder is a company, a certified copy of the resolution of the Board of Directors of the company (personally signed by the Chairman of the Board), 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 the Bid.

If the Bidder is a close corporation, a certified copy of a resolution of the Board of Officials (personally signed by the Chairman of the Board), authorising the person who signs this Bid as well as any contract resulting from this Bid and any other documents and correspondence in connection with this Bid and/or Contract requiring such signature, to do so on behalf of the close corporation, must be submitted with the Bid.

If the Bid is a partnership, a certified copy of the resolution of the partners (personally signed by all partners), authorising the person who signs this Bid, as well as any contract resulting from this Bid and any other documents and correspondence in connection with this Bid and/or Contract on behalf of the partnership, must be submitted with the Bid.

If the Bid is submitted by a joint venture of more than one person(s) and/or companies and/or firms, it shall be accompanied by the following:

- (a) The original, or nocturnally certified copy of the original, documents under which such joint venture was constituted, Such document must *inter alia* define precisely the conditions under which the joint venture will function, its period of duration and the participation of the several constituent persons and/or companies and/or firms;
- (b) A certificate signed by or on behalf of each participating person and/or company and/or firm authorising the person(s) who signed the Bid to do so.

3. FINANCIAL STANDING

Should he be so requested, the Bidder shall within 7 days of the date upon which he is requested to do so, submit a full report from his banker as to his financial standing. The Employer may, in its discretion, condone any failure to comply with the foregoing condition.

The Employer, and/or the Engineer as his agent, also reserves the right to approach the Bidder's banker or guarantor(s) as indicated in the Bid document, or the bankers of each of the individual members of any joint venture that is constituted for purposes of this Contract, with a view to ascertaining whether the required guarantee will be furnished. Bidders must also complete form SBD2.

4. ALTERNATIVES

Any deviation from the Specifications, Conditions of Bid or Conditions of Contract must be clearly stated, and all savings or additional expenditures or time implications that will be brought about by each such deviation or alternative proposal must be fully and clearly quantified in the Bid documents.

Should the Bidder wish to offer alternatives designs and/or construction or any other alternative he shall include with his Bid full details thereof, including a complete schedule of quantities, formal design calculations, and full details of all alternative components proposed to be included in the works.

Failure to properly comply with this clause, thereby enabling the Employer and/or the Engineer to properly assess the full implications of the alternative Bid, is likely to disqualify the alternative offer from further consideration.

No submission by the Contractor after award for additional payment or time for completion of the Works relating to the alternative offer will be considered, the Bid rates submitted being considered to reflect the full and final cost implications of the alternative offer.

5. BIDDERS TO COMPLY WITH DOCUMENTS

Bidders must allow in their Bids for all labour, material, machinery and everything necessary for the execution and completion of the Contract in accordance with the Bid documents. No alterations may be made in the Form of Bid, Schedule of Quantities or other documents and the Bid will be deemed to comply entirely with the terms of the documents.

6. SUBCONTRACTORS

Bidders must submit with their Bids (Schedule of Proposed Subcontractors) the names and addresses of any subcontractors they propose to appoint, as well as the section of the Works on which each such sub contractor will be employed.

7. EMPLOYMENT OF LOCAL LABOUR

The Government has indicated a desire to stimulate the local economic activities in the area and for this reason a high rate of local labour will be a pre-requisite for the activities which are to be executed by means of LIC-methods.

8. ABILITY TO PERFORM

In the adjudication of Bids due account will be taken of the Bidder's past performance in the execution of similar works of comparable magnitude, and the degree to which he possesses the necessary technical, financial and other resources to enable him to complete the Works successfully within the contract period. Bidders are required to satisfy the Employer and the Engineer as to their ability to perform and complete the Work timeously and with satisfactory quality, and shall furnish details in Annexure B, Schedule of similar work undertaken by Bidder, or contracts of a similar nature and magnitude which they have successfully executed in the past.

END OF SECTION 2

BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SECTION 3

SPECIAL CONDITIONS OF CONTRACT

BID NO. DWS 52-0816 WTE
RURAL COMMUNITY WATER SUPPLY AND SERVICES
EQUIPPING OF BOREHOLES NATIONWIDE
SPECIAL CONDITIONS OF CONTRACT
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BID NO. DWS 52-0816 WTE**RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES****EQUIPPING OF BOREHOLES NATIONWIDE****SPECIAL CONDITIONS OF CONTRACT**

The Contract shall be governed by the General Conditions of Contract for Works of Civil Engineering Construction, First Edition (2004): The only variations from these General Conditions of Contract shall be as given in the Special Conditions of Contract below.

The following additions to and variations from the General Conditions of Contract (First edition-2004) apply to the Contract. Certain pro-formas that are contained in the General Conditions of Contract 2004 are also replaced by the corresponding pro-formas that are bound into this document.

1.1 Definitions**1.1.4 Commencement Date**

Replace the entire contents of Clause 1(1)(c) with the following:

"Commencement Date" means the date of receipt by the Contractor of an official departmental order.

1.1.13 Due Completion Date

Add the following to the end of this definition:

This clause shall apply *mutatis mutandis* to any portion or phase of the Works that may be described in the Project Specification or in the Appendix to the Bid, or agreed subsequently between the Contractor and the Employer, and committed to writing.

1.1.14 "Employer" means Nationwide, Directorate Planning and Implementation on behalf of the Department: Water and Sanitation and Forestry and shall include the Employer's duly authorised representative.**1.1.15 "Engineer" means any director, associate or professional engineer appointed generally or specifically by the Nationwide, Directorate Planning and Implementation to fulfil the functions of the Engineer in terms of the Conditions of Contract.**

4.2 Contractor's Liability for his own Design Errors

Add the following to the end of Clause 4.2

The successful Bidder will be required to provide the following to the Engineer for retention by the Employer or his assignee in respect of all works designed by the Contractor.

- (a) A Certificate of Stability of the Works signed by a registered Professional Engineer confirming that all such works have been designed in accordance with the appropriate codes of practice.
- (b) Proof of registration and of adequate and current professional indemnity insurance cover held by the designer(s).
- (c) Design calculations should the Engineer request a copy thereof.
- (d) Engineering drawings and workshop details (both signed by the relevant professional engineer), in order to allow the Engineer to compare the design with the specified requirements and to record any comments he may have with respect thereto.
- (e) "As-Built" drawings in DXF electronic format after completion of the Works.

6. Subcontracting

Replace the entire contents of Clause 8 with the following:

- 6.1 The Contractor shall not sub-let the whole of Contract
- 6.2 Where it is so required in terms of the Project Specifications, the Contractor shall sub-let portions of the Works to local sub-contractors with a view to maximising labour intensive construction, all in accordance with the various provisions of the Contract; provided always that unless stated to the contrary elsewhere in the Contract, the Contractor shall be entitled to sub-let further portions of the Works, additional to those which he is required to sub-let in terms of this sub-clause.
- 6.3 Except where otherwise provided in the Contract, the Contractor shall not sub-let any part of the Contract without the prior written consent of the Engineer, which consent shall not be unreasonably withheld.
- 6.4 The Contractor shall obtain the Engineer's prior written consent in respect of any particular subcontractor to whom he intends sub-letting any portion of the Works and such consent shall not be unreasonably withheld; provided always that any such consent when given, shall not be deemed to constitute any form of approval by the Engineer, of the competence or suitability of any particular subcontractor in respect of whom such consent is given.
- 6.5 Any consent given by the Engineer in terms of Sub-clauses 6.3 or 6.4 shall not relieve the Contractor of any liability or obligations under the Contract, and he shall be fully liable for the acts, defaults and neglects of any subcontractor (whether locally contracted or otherwise) as well as for the acts, defaults and neglects of such subcontractor's agents or employees, as fully as if they were the acts, defaults or neglects of the Contractor, his agent or employees.

- 6.6 The Engineer's consent in respect of any particular subcontractor may be withdrawn at any time should reasonable grounds be given therefore in writing to the Contractor by the Engineer, in which event the Contractor shall forthwith terminate the engagement of that subcontractor on the Works.

The withdrawal (in terms of Sub-Clause 6.6 above) by the Engineer of his consent in respect of any particular sub-contractor that is engaged in the execution of any portion of the Works, including any portions of the Works which are required in terms of Sub-Clause 6.2 above to be sub-let by the Contractor to local subcontractors, shall not relieve the Contractor of any of his obligations under the Contract, nor of any of his obligations to sub-let the particular portions of the Works concerned.

Unless otherwise stipulated in the Contract:

- (a) the provision of labour, whether locally employed or not; or
- (b) the purchase of materials which are in accordance with the Contract; or
- (c) the purchase or hire of Constructional Plant;

Shall not be regarded as sub-letting, as contemplated in this clause, for which the Contractor is required to obtain the Engineer's consent in terms of Sub-Clauses (6.3 and 6.4".

14. Notices and Fees

- 14.1.2 Add the following paragraph to Sub-Clause 14.1.2:

Proof of insurance shall be submitted to the Employer prior to Commencement of the Works (Clause 12), and copies of the policies and proof of due payment of all premiums shall be presented to the Employer within twenty eight (28) days of the Date of Commencement.

Workmen's Compensation

Amend Clause 38(7) to read as follows:

The Contractor shall provide proof that he has paid all contributions that are required in terms of the provisions of the Compensation for Occupational Injuries and Diseases Act (Act No. 130 of 1993), within 30 days of the Commencement Date.

Rate of Progress

Add the following:

No such instruction by the Engineer to expedite progress shall be the subject of additional compensation to the Contractor unless the instruction explicitly states that the Contractor is entitled to additional compensation, and cites the amount of such compensation or the basis upon which is to be determined.

Time for Completion

Amend this clause to read as follows:

The various portions or phases of the Works, as well as the whole of the Works, shall be completed by the Due Completion Dates(as defined in Clause1.1.13 of these Conditions.

If before the issue of a Certificate of Practical Completion for the whole of the Works, or for any specific portion thereof that is identified in the Project Specifications and in the Appendix to Bid, any further part of the Works has been:

- (i) certified as complete in terms of a Certificate of Practical Completion; or
- (ii) occupied or used by the Employer, his agents, employees or other contractors (not being employed by the Contractor);

then the appropriate penalty for delay referred to in Sub-Clause 46(1)(a) above shall be reduced by the amount which is determined by the Engineer to be appropriate under the circumstances.

If the Contractor shall, without the prior written permission of the Engineer, in respect of any portions of the Works which are prescribed in the Project Specifications to be executed using labour intensive construction methods, or for which the maximum size and capacity of mechanical plant and equipment is restricted in terms of the Contract:

- (a) fail to execute such portions of the Works, or any parts thereof, utilising labour intensive construction methods strictly in accordance with the provisions of the Contract; or
- (b) utilise in the execution of such portions of the Works, or any parts thereof, mechanical plant or equipment which is in conflict with the terms of the Contract; or
- (c) utilise in the execution of such portions of the Work, workers drawn from sources other than those allowed in terms of the Contract;

then the Contractor shall be liable to the Employer for the percentage that is stated in the Appendix of the value of the Works so executed in conflict with the provisions of the relevant Project Specification, as a penalty for non-compliance.

The imposition of penalties in terms of Sub-Clauses 14.1.2 shall not relieve the Contractor from his obligation to complete the Works, nor from any of his obligations and liabilities under the Contract.

All penalties for which the Contractor becomes liable in terms of Sub-Clauses 14.1.2 shall be accumulative. The Employer may, without prejudice to any other method of recovery, deduct the amounts of all such penalties from any monies in his possession that are or may become due to the Contractor.

The imposition of any penalties in terms of Sub-Clauses 14.1.2 shall not limit the right of the Engineer or the Employer to act.

END OF SECTION 3

SECTION 4

BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SECTION 4

SPECIFICATIONS

BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SPECIFICATIONS

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PSA	General
PSAB	Engineers office
PSC	Site clearance
PSD	Earthworks (small works)
PSDB	Earthworks (Pipe Trenches)
PSDK	Gabions and pitching
PSGA	Concrete (small works)
PSHA	Structural steelwork (sundry item)
PSL	Medium pressure pipelines
PSLB	Bedding (pipes)

SECTION 4.3 PARTICULAR SPECIFICATIONS

PL	Legend and Nomenclature of Pipelines
PB	Equipment of boreholes
PC	Construction of reservoirs
PD	Electrical work at boreholes

SECTION 4.4: SPECIFICATION DRAWINGS LIST

SECTION 4.5: COMMISSIONING AND COMPLETION CERTIFICATE

**SECTION 4.6: FORM F - ELECTRICAL BOREHOLE INSTALLATIONS:
INSPECTION AND PRE-COMMISSIONING**

SECTION 4.7: FORM G - BOREHOLE INSTALLATION DETAILS

Notes Application

1. The various documents listed in; Section 1 shall be treated as mutually explanatory. However, should any requirement of the Project Specifications (Section 4.2) conflict with any requirement of the Standardised Specifications (Section 4.1) or with any requirement of the Particular Specifications (Section 4.3), then the requirement of the Project Specification shall prevail.
2. The Project Specification consists of two portions, viz.

Portion 1, contains a description of the Contract, the Works to be constructed under the Contract, and other information of a general nature pertaining to the Contract.

Portion 2, contains references, amendments and additions to the Standard Specifications that are applicable to the Contract.
3. Clauses in the Project Specifications are prefixed with the letters PS. Portion 1 of the Project Specifications contains clauses numbered sequentially, but prefixed with the letters PS. Portion 2 of the Project Specifications contains clauses numbered sequentially (with reference to the actual Standard Specification clauses being referred to, amended or added to) also prefixed with the letters PS and letter applicable to the relevant Project Specification.
4. Particular Specifications are, in application, additional sections of the Standard Specifications. Particular specifications are numbered alphabetically in accordance with the standard system used in the Engineers' office. Individual clauses are numbered sequentially.

BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SECTION 4.1

STANDARD SPECIFICATIONS

BID NO. DWS 52-0816 WTE**RURAL COMMUNITY WATER SUPPLY AND SERVICES****EQUIPPING OF BOREHOLES NATIONWIDE****STANDARD SPECIFICATIONS****4.1.1 SANS 1200 Standardised Specifications for Civil Engineering Construction**

The applicable SANS 1200 Standardised Specification for this Contract shall be the following:

- A - General
- AB - Engineers office
- C - Site clearance
- DA - Earthworks (Small Works)
- DB - Earthworks (Pipe Trenches)
- DK - Gabions and pitching
- GA - Concrete (small works)
- HA - Structural steelwork (sundry items)
- HB - Cladding and sheeting
- L - Medium pressure pipelines
- LB - Bedding (pipes)

PROJECT SPECIFICATION INDEX

PS	PORTION 1: THE WORKS
PSA	PROJECT SPECIFICATION
PSAE	ENGINEERS OFFICE
PSC	SITE CLEARANCE
PSDA	EARTHWORKS (SMALL WORKS)
PSDB	EARTHWORKS (PIPE TRENCHES)
PSDK	GABIONS AND PITCHING
PSGA	CONCRETE (SMALL WORKS)
PSHA	STRUCTURAL STEEL (SMALL WORKS)
PSL	MEDIUM PRESSURE PIPELINES
PSLB	BIDDING PIPES
PL	LEGEND AND NOMENCLATURE OF PIPELINES
PB	EQUIPPING OF BOREHOLES
PC	CONSTRUCTION OF RESERVOIRS AND PIPELINES THROUGHOUTS
PD	ELECTRICAL WORK AT BOREHOLES

END OF SECTION 4.1

BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SECTION 4.2

PROJECT SPECIFICATIONS

BID NO. DWS 52-0816 WTE
RURAL COMMUNITY WATER SUPPLY AND SERVICES
EQUIPPING OF BOREHOLES NATIONWIDE
PROJECT SPECIFICATIONS

PORTION 1: THE WORKS

PS 1 GENERAL DESCRIPTION OF THE WORKS

Bids are invited for the refurbishment, equipping of boreholes and the execution of associated civil engineering works as part Nationwide Directorate Planning and Implementation "Rural Community Water Supply Programme". Works under this programme are to be executed nationwide. The operation area is being reflected in the Locality Plans in the National Context, Regional Context and Province Context. Prospective Bidders must take note of the fact that the contract will be executed on the basis of a "Bill of Quantities" contract. Bid prices must include site, establishment cost (see PSA 15).

This contract comprises the equipping of boreholes and appurtenant civil engineering work in all provinces.

The works to be executed under this contract consists of the following:

- (1) Equipping of tested boreholes with pumps and power units as detailed in the document.
- (2) Erection of pump houses and appurtenant works.
- (3) Construction of rudimentary water distribution systems.
- (4) Construction of secondary reticulation systems.
- (5) Construction/erection of storage facilities associated with (iii) above.
- (6) Installation of piezometer tubes for monitoring of static water levels.

Bidders are to take note of the fact that the bulk of the equipping work is to be executed via "labour intensive construction" (=LIC) methods. The execution of the work will be done on one of the following methods or as a combination of the methods.

- (i) Established contractor to employ people from the village(s) where the work is to be done.
- (ii) Nominated emerging sub-contractors which are also to be formally contracted and trained by the established contractor.

- (iii) Established and emerging contractor which has entered into a joint venture agreement with each other.

The Bidders must take note of the fact that it will be expected of the successful Bidder to enter into a formal agreement with the Nominated Emerging Contractor (=NEC) and/or the "normal" Emerging Contractor (=EG). The established/main Contractor (=MC) will be responsible for the quality of the work of the NEC and/or EC. Provision has been made in Schedule 1 of the Schedule of Rates for a % mark-up on the amount payable to the NEC by the MC.

The various provinces nationwide are indicated on the map. Although not foreseen at this stage, it may happen that it will be expected of the Contractor to execute some work outside the existing borders of the area of jurisdiction. If the Bidders have any objection to it, it must be clearly indicated in Section 7.1, i.e. Alterations by Bidder, in this document.

The contract will consist of two main types of activities namely **Mechanical/Electrical** and **Civil Engineering Works**. The work to be carried out during the currency of the contract may be given as separate tasks. Each task to be undertaken will be issued as a written instruction by the Engineer and will consist of a detailed scope of work and relevant drawings for each particular task.

The two main activities can be described as follows:

- (a) Mechanical/Electrical:

Installation of mechanical and/or electrical equipment in boreholes designated by the Engineer for equipping. The boreholes are to be equipped with hand pumps, windmills submersible or positive displacement pumps. The submersibles or positive displacement pumps could have electrical or diesel power.

- (b) Civil Works:

The associated civil engineering works include, but are not limited to the following:

- Elevated tanks, tank stands and appurtenant pipe work.
- PVC Reservoirs.
- Rudimentary domestic draw-offs
- Construction of structural steel and IBR gladded borehole pump houses.
- Secondary township reticulations and house connections.

PS 2 DESCRIPTION OF SITE AND ACCESS

The work to be undertaken is generally in or near existing villages in the provinces mentioned above. The access to the individual sites is generally very poor and it could be expected that four wheel drive vehicles might be required at times.

It is of critical importance that Contractors should under all circumstances, liaise with the regional authority's representative prior to going on site to ensure that the authorities could inform people of work to be carried out by the Contractor. If the representative cannot be contacted, the Contractor should then not enter into a village for working purposes.

PS 3 NATURE OF GROUND AND SUBSOIL CONDITIONS

The nature of ground and sub-soil conditions may vary from site to site. The Contractor must familiarise himself as far as is practically possible with soil conditions in the region.

PS 4 DETAILS OF THE CONTRACT

The work required to be done entails the following:

- (i) Establishment of the Contractor's camp at borehole sites to be equipped.
- (ii) Limited site clearance and earthworks (if necessary) to accommodate the borehole equipment. (Only on instruction of the Engineer or his Representative).
- (iii) Equipping of boreholes with pumps and power units as specified by the Engineer (e.g. hand pumps, windmills, submersible, positive displacement or diesel powered units).
- (iv) Construction of structural steel, IBR gladded pump houses.
- (v) Concrete work associated with the above-mentioned equipment.
- (vi) Pipe work associated with the installation of pumping equipment.
- (vii) Construction of elevated tank stands and tank footings, erection of pressed steel and/or polypropylene tanks and appurtenant pipe work.
- (viii) Construction of pipe work for rudimentary water distribution systems.
- (ix) Construction of pipe work for secondary water reticulations and house connections.
- (x) Construction of rudimentary draw-off.
- (xi) Commissioning of the works on completion.
- (xii) Maintenance of the works for a period of 12 months.
- (xiii) Installation of piezometer tubes for monitoring static water levels.
- (xiv) Supply of water level meters associated with (xv) above.

PS 5 CONSTRUCTION PROGRAMME**PS 5.1 Information to be made available**

Most of the boreholes to be equipped are still to be sited, drilled and test pumped. Subsequent to the test pumping of boreholes reports will be provided by the geohydrologist to the Engineer. The Engineer will provide the contractor with a list of specifications regarding the equipping of the boreholes. It is envisaged that the information will be made available not less than four weeks prior to the installation date, to enable the contractor to order the materials and programme the works.

PS 5.2 Labour Intensive Construction

The principle of labour intensive construction for certain portions of the works to be executed is to be introduced. See clause PS20.3 for details regarding the above-mentioned.

PS 5.3 Phasing of the Works

The works will be scheduled, as far, as is practically possible, so that the Contractor can work uninterrupted for the duration of the contract order.

The Contractor must take note of the fact that only inter-borehole movements will be paid for. It is also important to take note of the fact that such payment will be made only for the Contractor's first equipment team (if more than one team are fielded) to move to a specific site. No inter-province movements will be paid. Inter-hole move payments shall be made only once per installation.

Should the Contractor be requested by the Engineer to do work not included in his above-mentioned programme, he will then be paid for the movement according to rated included in the Bill of Quantities. These movements are those which infringe the programme which had been drafted according to PS4 above.

PS 5.4 Interruption in Work Schedule

If information or particulars as mentioned in Clause PS4 is not available from the Client regarding the equipping of boreholes or appurtenant civil works for any period of time, the Contractor will be ordered in writing to discontinue work. The contractor will then be granted an extension of time. When the contractor is requested to resume work, the establishment cost will be paid as if the Contractor moved in from another site as per the Bid. No adjustment will be made in any of the rates in the Bill of Quantities.

PS 5.5 Format and Approval

As soon as information is available with regard to a village to be reticulated, the Contractor shall supply, within 14 days, a suitable and realistic construction programme for the consideration of the Engineer. This programme shall show the proposed scheduling and methods of execution of the Works and the resources to be allocated to each item or phase of execution of the Works and the resources to be allocated to each item or phase of the work. Quantities proposed for execution for a specific village and the anticipated cash flow based upon these quantities should be shown, due allowance being made for price escalations and retention moneys.

The Contractor will be expected to progress with the Works in accordance with the approved programme and shall not deviate from the order of execution shown in the programme without the prior approval of the Engineer or his Representative. Should such approval be given, an adjusted programme shall be produced within 7 days and submitted to the Engineer for evaluation. Progress in advance of the programme or certain phase of the Works shall not be considered adequate reason for poor progress on another portion or phase.

PS 5.6 Partial Completion and Monthly Take Over

Boreholes equipped and appurtenant civil engineering work completed per village, will be taken over within two weeks after completion for which a Certificate of Completion will be issued. The maintenance period on the work completed will commence with the issuing of the Certificate of Completion.

PS 5.7 Penalties

The penalties for late completion are indicated in the Appendix to Bid.

The penalty in respect of each village shall remain in force until the work for that particular village has been completed. The penalties for the villages will be applied independently and are accumulative.

PS 6 SITE FACILITIES AVAILABLE**PS 6.1 Contractor's Camp**

An area will be made available by the Employer for the Contractor's camp and depot, where materials can be stored and from which the administration of the contract will be undertaken by the Contractor. However, the Contractor will be responsible to arrange with the necessary authorities in each village to store equipment and material.

PS 6.2 Source of Water Supply

Water supply will not necessarily be available at the camp or depot nor each construction site in each village.

The Contractor shall be responsible under the Contract for the supply and distribution at his cost of all water that he may require for purposes of constructing the Works. Accordingly, the Contractor shall pay all connection fees and consumption charges, and at his cost provide all connections, consumption meters, pipe work, storage tanks, transport and other items associated with the supply of water for the Works.

Water for filling, testing and disinfecting the pipelines and structures will be made available by the Employer at no cost to the Contractor. However, should the pipelines and/or structures have to be drained and refilled due to defective materials or workmanship by the Contractor or by his subcontractors, then the water required for refilling will be for the account of the Contractor.

PS 6.3 Source of Power Supply

Power supply will not necessarily be available at the camp or depot nor at each construction site.

PS 6.4 Housing

The Contractor shall be permitted to house Key Personnel only within his camp site(s). At the commencement of the Contract, the Contractor shall inform the Engineer of his intentions regarding the housing of Key Personnel on Site, and he shall thereafter ensure that all such accommodation is kept neat and tidy, hygienic and properly controlled at all times. Should at any stage of the Contract the Employer and/or the Engineer be of the opinion that the housing of Key Personnel within the camp site(s) of the Contractor is causing disturbance or inconvenience to the landowner or to nearby residents, then the authority granted by this clause for the Contractor to house Key Personnel on Site may be withdrawn, either partially or entirely.

The Contractor shall at all times conform to all requirements contained in law or bylaws, as well any other requirements set by the controlling local authority.

PS 6.5 Ablution Facilities

No ablution facilities are available at the camps and depots or construction sites.

PS 7 SITE FACILITIES REQUIRED**PS 7.1 For the Contractor**

Whatever may be required for the satisfactory execution of the Contract.

PS 7.2 For the Engineer

As specified under Section PSAB (Portion 2 of the Project Specifications).

PS 7.3 Sanitary facilities

Water borne sewerage is not available on site. Chemical or flush toilets with on-site disposal shall be provided and maintained for the use of the Contractor's personnel, the Engineer and representatives of the Employer at all camp sites that the Contractor may establish for construction of the Works. In addition, the Contractor shall at all times during construction of the Works provide adequate sanitary facilities on the construction site so that all employees are at all times within easy reach of sanitary facilities.

PS 8 STATUTORY REGULATIONS

The Occupational Health and Safety Act, Act 85 of 1993 (referred to as "the Act" below), and all regulations promulgated thereunder must be adhered to by the Contractor, with specific reference to the safety of all employees and the public, irrespective of whether such employees are employed by the Contractor or by his subcontractors (including local subcontractors). The Contractor, in entering into this Contract, hereby agrees with the Employer in terms of Section 37(2) of the Act, that the Contractor as an employer in its own right and in its capacity as Contractor for the execution of the Works, shall have certain obligations and that the following arrangement shall at all times for the duration of the Contract apply between the Contractor and the Employer to ensure compliance by the Contractor with the provisions of the Act, namely:-

- (i) The Contractor undertakes to acquaint the appropriate officials and the employees of the Contractor with all relevant provisions of the Act, and the regulations promulgated in terms of the Act;
- (ii) The Contractor undertakes that all relevant duties, obligations and prohibitions imposed in terms of the Act and regulations will be fully complied with; and
- (iii) The Contractor hereby accepts sole liability for such due compliance with the relevant duties, obligations and prohibitions imposed by the Act and regulations, and expressly absolves the Employer and the Engineer from being obliged to comply with any of the aforesaid duties, obligations and prohibitions in respect of the Works; and
- (iv) The Contractor shall be obliged to report forthwith to the Employer and the Engineer any investigation, complaint, or criminal charge which may arise as a consequence of the provisions of the Act and regulations pursuant to work performed on behalf of the Employer, and shall, on written demand, provide full details in writing of such investigation, complaint or criminal charge.

PS 9 COMMUNICATION LIAISON AND COMMUNITY RELATIONS

In all dealings with communities through which the Works are to be constructed, and in all dealings with workers employed from within such communities, the Contractor shall take due cognisance of the character, culture and circumstances of the specific community, and shall at all times use his best endeavours to avoid the development of disputes and rather to foster a spirit of co-operation and harmony towards the project.

The Contractor shall at all times, keep the Engineer fully informed regarding all matters affecting or negotiated between the Contractor and the community, and he shall attend all liaison meetings as may be arranged by the Engineer and/or the Employer. All matters concerning the community shall be discussed and where possible, resolved at such meetings.

Where any resolution during such negotiations or at such meetings shall be contrary to the terms and provisions of the Contract, the Contractor shall not give effect thereto without a prior written instruction from the Engineer. Where the Contractor is of the opinion that any instruction of the Engineer issued in terms of this clause will result in the incurring of additional costs which were not provided for in his Bided rates and prices and/or that a delay in the progress of the Works will result, he shall be entitled to submit a claim in terms of Clause 51 of the Conditions of Contract, provided always that the period of fourteen (14) days referred to in Clause 51 shall be reduced to three (3) normal working days in respect of all claims submitted in terms of this clause.

PS10 WORKMANSHIP AND QUALITY CONTROL

The onus to produce work that conforms in quality and accuracy of detail to the requirements of the Specifications and of the Drawings rests with the Contractor, and the Contractor shall, at his own expense, institute a quality-control system and provide experienced engineers, foremen, surveyors, materials technicians, other technicians and technical staff, together with all transport, instruments and equipment to ensure adequate supervision and positive control of the quality of the Works at all stages of the Contract.

The costs of the Contractor's supervision and process control, including all testing carried out by the Contractor, will be deemed to be included in the rates Bided for the various items of work. The Contractor's attention is drawn to the provision of the various Standardised Specifications regarding the minimum frequency of process control testing that is to be executed. The Contractor shall, at his own discretion, increase this frequency where necessary to ensure adequate control of the quality of the Works at all times. Upon completion submission of each portion of the Works to the Engineer for examination, the Contractor shall furnish the Engineer with the results of relevant tests, measurements and levels, thereby indicating compliance with the Specifications. The Engineer will not examine or inspect any portion of work submitted for approval unless the request for inspection and approval is accompanied by relevant tests, measurements and levels indicating compliance.

PS11 FEATURES REQUIRING SPECIAL ATTENTION

PS 11.1 Other Contractors

Drilling and/or testing programmes as well as normal maintenance contracts may be under way in the villages where holes are to be equipped. No additional payments will be made in this regard to the equipping contractors.

PS11.2 Construction within Built-up Areas

The bulk of the work is situated in inhabited residential areas. Meticulous care is required to ensure:

- (a) convenient access provided to the public or their property during all stages of construction;
- (b) ensuring the safety of the public during all stages of construction;
- (c) extended liaison with concerned parties, including the local Tribal Authority, Province Councils, traffic departments, residents and management of business, is imperative.

This will include notification in advance of the commencement of proposed works, etc.

VERY IMPORTANT:

THE CONTRACTOR WILL BE REQUIRED TO APPOINT A PUBLIC RELATIONS OFFICER (PRO), WHO WILL FORM PART OF THE FULL-TIME STAFF COMPLEMENT. NO SEPARATE PAYMENT WILL BE MADE FOR SUCH A PRO

PS11.3 Trenches in Narrow Road Reserves

Prospective Bidders must take note of the fact that at some places trench excavation will take place in fairly narrow road reserves/alleys. The difficulty to overcome this obstacle must be incorporated in the Bided rates. No separate and/or additional payment will be made in this regard.

PS11.4 Reinstatement of Fences

The Contractor shall give all land owners and residents a minimum of 48 hours notice of his intent to dismantle fences to properties, where indicated on the Drawings or so ordered by the Engineer. The Contractor shall note all aspects relevant to the condition of existing fencing and shall take photographs thereof prior to dismantling, and shall acquire the signature of the owner/occupant agreeing to such conditions.

After reinstatement, both the Contractor and the owner/occupant shall sign the form confirming that the condition of the fence is at least equivalent to its condition before dismantling.

PS11.5 Protection of Buildings and Structures

The Contractor shall give all residents or other parties owning a building or structure within an appropriate radius (not less than 100 m) from any point of blasting, a minimum of 48 hours notice (in the format bound into Section 4.4.C) of his intent to execute any blasting work. The Contractor shall note all aspects relevant to the condition of the affected buildings and/or structures prior to blasting. In the event of damage to existing buildings/or structures as a result of blasting, remedial work shall be done to the satisfaction of the owner/occupants at the Contractor's expense.

Compliance with this clause will not relieve the Contractor of any of his responsibilities in terms of the Contract, or in terms of sub-clause 5.1.1.3 of SANS 1200D.

PS11.6 Care of the Site

At all times during construction of the Works and upon completion thereof, the Site of the Works shall be kept and left in a clean and orderly condition. The Contractor shall store all material s and equipment for which he is responsible in an orderly manner, and shall keep the Site free from debris and obstructions.

PS11.7 Control of Water

The Contractor shall at all times and in all respects be responsible for the handling of stormwater from higher-laying areas above the Works, and for the handling of any subsurface water that may affect Works. No separate payment shall be made in this regard, as all costs related thereto should be deemed to be included in the rates Bided for the various items of work that are included in the Schedule of Quantities. Refer also to SANS 1200 A, clause 5.5, in this regard.

PS12 DRAWINGS, OPERATION AND MAINTENANCE MANUALS

All information in the possession of the Contractor that is required by the Engineer's Representative in order to complete the As-Built drawings and prepare a completion report for the Employer must be submitted to the Engineer's Representative before a Certificate of Practical Completion will be issued for the Works. Similarly, the Contractor will be required to submit full details of all pipes, valves, meters and specials in a suitable loose bound format, including any special operational and maintenance procedure related thereto for incorporation in the overall operation and maintenance manual for the Scheme prior to the issue of a Certificate of Completion for the Works.

Only figure dimensions on the Drawings may be used in the interpretation thereof, and the Drawings shall not be scaled unless the Contractor is so instructed by the Engineer in writing. The Engineer will upon written request provide any dimensions that may have been omitted from the Drawings.

PS13 SAMPLES

Materials or work that do not conform to the approved samples submitted in terms of Sub-Clause 26(4) of the Conditions of Contract, will rejected. The Engineer reserves the right to submit samples for testing to ensure that the material represented by the sample meets the specified requirements.

PS14 NOTICES, SIGNS, BARRICADES AND ADVERTISEMENTS

Notice signs and barricades (required in terms of Clause 34 of the Conditions of Contract) as well as advertisements may only be erected where approved by the Engineer. The Contractor shall be responsible for their supply, erection, maintenance and ultimate removal and shall make provision for this in his Bided rates. The Engineer shall have the right to have any sign, notice or advertisement moved to another location, or to have it removed from the Site of the Works, should it in any way prove to be unsatisfactory, inconvenient or dangerous to the general public.

PS15 OPEN TRENCHES

Trenches may not be left open during the builder's holidays, and shall be safeguarded at all times from danger to the public. Safe trench-crossings shall be provided at all intersections with accesses to properties and with public roads and paths. The length of trench left open at any one time may be restricted by the Engineer, should he consider such restriction to be in the interest of public safety.

PS16 SPOIL MATERIAL

No indiscriminate spoiling of materials will be permitted. Surplus or unsuitable materials shall be spoiled at sites designated by the Engineer for this purpose. All spoiling shall comply with the applicable statutory and municipal regulations of the local or rural authority in whose area it is located.

PS17 INFORMATION IN RESPECT OF PLANT

Information relating to plant on Site shall be recorded in the Daily diary (Section 4.4C). In addition, the Contractor shall deliver to the Engineer, on a monthly basis, a detailed summary of construction plant kept on the Site, full particulars given for each day of the month. Distinction shall be made between plant in working order and plant out-of-order. Such inventory shall be submitted by the first day of the month following the month to be reported.

PS18 INFORMATION IN RESPECT OF EMPLOYEES

Information relating to labour and management on Site shall be recorded in the Daily Diary. In addition, the Contractor shall deliver to the Engineer, on a monthly basis, a detailed summary of supervisory staff, labour employed (own and local labour) by category, and sub-contractors (both local and imported) for each day of the month. Such return shall be submitted by the first day of the month following the month to be reported.

PS19 ABNORMAL RAINFALL

Extension of time for completion of the Contract shall be allowed in the event of abnormal rainfall in accordance with the following formula:

$$V = (N_w - N_n) + (R_w - R_n)/20$$

Where

V = Extension of time in calendar days for the calendar month under consideration

N_w = Actual number of days the calendar month under consideration on which a rainfall of 10 mm and more is recovered

R_w = Actual total rainfall in mm recorded during the calendar month under consideration.

N_n = Average number of days, derived from rainfall records, on which a rainfall of 10 mm and more was recorded during the relevant calendar month as per the data tabulated hereinafter

R_n = Average total rainfall in mm for the relevant calendar month, derived from rainfall records, as tabulated hereinafter.

Where the extension of time due to abnormal rainfall has to be calculated for portion of a calendar month, pro rata values shall be used. Should V be negative for any particular month, and should its absolute value exceed the corresponding value of N_n, then V shall be taken as being equal to minus N_n. The total extension of time to be granted shall be the algebraic sum of all the monthly extensions, provided that if this total is negative then the time for completion shall not be reduced due to subnormal rainfall.

Rainfall records for the period of construction shall be taken on Site. The Contractor shall provide and install all the necessary equipment for accurately measuring the rainfall **per village**. The Contractor shall also provide, erect and maintain a security fence plus gate, padlock and keys at each measuring station, all at his own cost. The Engineer or his Representative shall take and record the daily rainfall readings. The Contractor shall be permitted to attend these readings, in the company of the Engineer's Representative. Access to the measuring gauge(s) shall at all times be under the Engineer's control.

The rainfall records applicable to this Contract (unless more appropriate records for the site are made available by the Weather Bureau) are those recorded at Pietersburg from 1898-1989. The following values of N_n and R_n shall apply:

MONTH	R_n (mm)	N_n (days)
January	110	4
February	130	4
March	110	3
April	45	1,5
May	20	0,5
June	10	0
July	10	0
August	13	0,5
September	30	1
October	80	3
November	100	4
December	130	5
TOTAL	788	23,5

PS20 LABOUR AND PERSONNEL

PS20.1 Contractors Personnel

The Contractor shall limit the utilisation of his permanently employed personnel to that of key personnel only on the Works, as defined below, and shall execute and complete the Works utilising a temporary workforce employed directly by the Contractor and/or by his sub-contractors, using the assistance of the Labour Desk(s), or similar arrangements which have been established for this purpose from the local community which is established in proximity to the Works or which will be consumers from the Scheme.

Without derogating from the Contractor's obligations to complete the Works within the specified time for completion in terms of Clause 45(1) of GCC 1990, the numbers in each category of the Contractor's key personnel, as stated by the Contractor in Section 7 of his Bid, will be strictly controlled during the contract period and any increase in numbers will be subjected to the prior approval of the Employer.

Key personnel means all contracts managers, site agents, site clerks, materials and survey technicians, quantity surveyors, trainers, supervisors, foremen, skilled plant operators, brick layers, welders, shutter hands and the like, and all other personnel in the permanent employ of the Contractor or his sub-contractors who possess special skills, and/or who play key roles within the Contractor's or his subcontractor's operations.

The Engineer may at his discretion, upon receipt of a written and fully motivated application from the Contractor, and where he deems the circumstances so warrant, authorise in writing that the Contractor may utilise in the execution of the Works, workers not being his key personnel but who are in his permanent employ. Without limiting the generality of application of this sub-clause, circumstance which may be considered by the Engineer to warrant authorisation of the use of the Contractor's permanent employees other than key personnel, include:

- (a) The unavailability from local sources of sufficient numbers of temporary workers and/or sub-contractors to execute the Works, provided always that the Contractor has satisfied the Engineer that he has exercised his best endeavours and taken all reasonable actions to recruit sufficient temporary workers and sub-contractors from local sources.
- (b) The unavailability within the temporary worker pool and/or from subcontractor sources available to the Contractor in terms of Contact, of sufficient skills necessary to execute the Works or specific portions thereof, in situations where the completion period allowed in the Contract is insufficient to facilitate the creation of the necessary skills through the provision of suitable training as contemplated in the Contract;
- (c) Any other circumstances which the Engineer may deem as constituting a warrant.

PS20.2 Temporary Workforce

The Contractor shall draw labour from the local communities through the Labour Desk(s), or similar arrangements, which have been established for this purpose. Accordingly, the workforce that is employed on Site shall consist of local residents, except for approved key staff in the permanent employ of the Contractor, to the maximum extent that is compatible with the requirements of Clause 24 of the Conditions of Contract.

The Labour Desk(s), or similar arrangements which have been established for this purpose shall assist in identifying available local labour and, where available, semiskilled labour as well as local subcontractors. The Labour Desks shall also assist and advise regarding conditions of employment, minimum wages, disputes and disciplinary procedures. The function of the Labour Desk(s) shall however in no way diminish the responsibilities of the Contractor in terms of Clause 23 of the Conditions of Contract.

Although the Contractor shall adhere to the statutory minimum wage rates (see Clause 6(5) of the Conditions of Contract), he is however at liberty to negotiate additional incentive payments based on performance.

A contract of employment or subcontract should be signed between the Contractor and each of his employees or sub-contractors, as the case may be. Likewise contracts of employment must be entered into between each such sub-contractor, and each of the specific subcontractor's employees. Employment and subcontract agreements shall make clear reference to at least the following conditions:

- The minimum agreed wage rate per hour in respect of labourers;
- The agreed pay rate per unit production where applicable;
- UIF and WCA payments;
- Minimum working hours per day;
- Start and end times of a daily shift;
- Lunch break times;
- Company Policy regarding:
 - Rain time
 - Sickness and absenteeism
 - Disciplinary matters
 - Grievances
- Method and frequency of payment;
- Work clothes and safety equipment to be issued.

PS20.3 Labour Intensive Construction

The Nationwide has decided that labour intensive construction methods are to be introduced and practised in some of the equipment activities of this project.

Labour Intensive Construction shall mean the economically efficient employment of as great a portion of labour as is technically feasible to produce a standard of construction demanded by the Specifications with completion by Due Completion Date, thus the effective substitution of labour for equipment.

Appropriate portions included in the Contract shall be executed using labour intensive construction methods. These portions of the Works shall be constructed utilising only locally employed labour and/or the labour of local sub-contractors, supplemented to the extent necessary and unavoidable by the Contractor's key personnel as provided for in sub-clause PS20.1, unless otherwise instructed by the Engineer and in accordance with the further provisions of the relevant sections of Portion 2 of the Project Specifications. The portions of the Works to be executed using labour intensive construction methods are:

- clearing and grubbing of the Site;
- bedding, selected fill, backfilling and compaction of all pipe trenches irrespective of depth, but assisted by mechanical compaction equipment in order to achieve the specified densities;
- excavation of pipe trenches where the ground conditions and trench depths permit economic production;
- transportation and spoiling of all trench materials, where the disposal site is located within 20 metres of source;
- removal of oversized materials to the edge of the road during the construction of roads and streets;
- laying, testing and disinfecting of all pipelines, including all fittings, valves and house/erf connections;

- construction of all manholes, valve chambers, thrust blocks pipeline markers and the like (earth-, concrete-, brick- and metal works);
- construction of the rudimentary draw-off assemblies;
- mixing, transporting, placing and finishing of all concrete;
- dismantling and re-erection of fences; and
- cleaning and tidying up of the Site.

In respect of those portions of works which are not listed above, the construction methods adopted and plant utilised shall be at the discretion of the Contractor, provided always that the construction methods adopted and plant utilised by the Contractor are appropriate in respect of the nature of the Works to be executed and the standards to be achieved in terms of the Contract.

PS 21 SUBCONTRACTING

PS 21.1 The Contractor shall appoint specialist subcontractors nominated by the Employer or the Engineer for those portions of the Works that are described in Section PSA in Portion 2 of the Project Specification.

PS 21.2 The Contractor shall sub-let to local small sub-contractors appropriate portions of the works that are designated in Clause PS 20.3 as being reserved for labour intensive construction methods.

PS 21.3 As required by Clause 8(4) of the Conditions of Contract, the Contractor shall be responsible for all work carried out by sub-contractors (whether nominated by the Employer or selected by the Contractor) on his behalf. The Engineer will not liaise directly with any such sub-contractor, nor will he become involved in any problems and/or disputes related to payments, programming, workmanship, etc, unless provided for in the Conditions of Contract. Such problems and/or disputes shall remain the sole concern of the Contractor and his sub-contractors.

PS 21.4 The Engineer may at his discretion, upon receipt of a written and fully motivated application from the Contractor, and where he deems the circumstances so warrant, and provided always that the Contractor has complied fully and in all respects with provisions of the Contract pertaining to subletting to local sub-contractors or has utilised his best endeavours to comply therewith, authorise in writing that the Contractor may employ local residents in terms of Clause PS 20.2 with the sole intent of executing on-the-job training of such local residents to suitable levels of skill that will enable the Contractor to sub-let appropriate portions of the Works as specified in Clause PS 20.2 to such local residents.

Without limiting the generality of application of this sub-clause, circumstances which may be considered by the Engineer to warrant such authorisation include:

- (a) non-receipt of valid or acceptable Bids/quotations from local sub-contractor;
- (b) serious default or failure of appointed local sub-contractor;

The Engineer shall not grant such authority in cases where it may reasonably be concluded on the available evidence that the invitation of further Bids/quotations in

accordance with the terms of the Contract, is likely to result in the successful completion of the portions of the Works concerned by local sub-contractors.

Should the Contractor, after suitable due endeavour, be unable to identify local residents suitable for and desiring to train as sub-contractors for portions of the Works as specified in Clause PS 20.2, then the Contractor shall be permitted to undertake the Works in question with his own workforce as provided for in Clause PS 20.1 above.

The Engineer shall monitor progress achieved with subcontractor training, and successful completion of this training shall be subject to his approval or instruction. The Contractor shall Bid rates for the training of sub-contractors and labour. See Clause PS 22 in this regard.

PS 21.5 As specified in Clause PS 20, the Contractor shall approach the Labour Desk or similar arrangements which have been established for purposes of the Contract for assistance and advice regarding conditions of employment, minimum wages, disputes and disciplinary procedures in respect of local sub-contractors.

PS 22 TRAINING

PS 22.1 Artisan and Skills Training

When required in respect of those portions of the Works that are listed under PS 9.3, and where insufficient skills are currently available within the identified communities via the Labour Desks or from local sub-contractors, the Engineer may, after due consideration and subject to budget constraints, authorise, in writing, the training of local labour in specific trades or other skills for direct employment of the Works or as local sub-contractors. Such training shall be carried out by specialists and shall be consistent with standards that are approved at industry level, such as training provided by CEITS or by the APEX Training Centre, or by training organisations that are certified by these bodies. The cost of this training shall be borne by the Employer, and the Contractor will be compensated for actual costs incurred in this regard under the Prime Cost item that has been included for this purpose in Schedule 2.

PS 22.2 In-house Training

Alternatively, under similar conditions and subsequent to due evaluation of all relevant factors, the Engineer may authorise, in writing, that in-house training of local labour be executed by the Contractor utilising the services of approved skilled key-personnel or artisans in his employ. The Contractor shall Bid rates for such training, inclusive of all training materials, construction materials (pipes, fitting, brick, sand, cement etc.) and small tools. Payment will be made to the Contractor as provided in Schedule 21 of the Schedule of Quantities.

END OF SECTION 4.2: PORTION 1

BID NO. DWS 52-0816 WTE**RURAL COMMUNITY WATER SUPPLY AND SERVICES****EQUIPPING OF BOREHOLES NATIONWIDE****PROJECT SPECIFICATIONS****PORTION 2: VARIATIONS AND ADDITIONAL CLAUSES****PSA GENERAL****PSA1 SPECIFICATION DRAWINGS (Clause 2.7)**

Specification Drawings may be included in this document as annexures to the Project and Particular Specifications. Where such Specification Drawings depict items and standard structures according to layouts and details differing from those shown in the Standardised Specifications, the layouts and details shown in the annexures to the Project and Particular Specifications shall be adopted.

PSA2 QUALITY (Clause 3.1)

All material used in the Works shall, where such mark has been awarded for a specific type of material, bear the SANS mark. Alternatively, the Contractor shall furnish the Engineer with certificates of compliance of materials, which bear the official mark of the appropriate standard.

PSA2.1 DEFINITIONS**PSA2.1 Definitions**

Add the following:

Task	- a quantified activity or operation.
Daily task	- a task that is required to be completed within a working day.
Task remuneration (order)	- remuneration as paid for a completed task or job (order).
Daily rate	- the remuneration of a day's work.
Daily wage	- see daily rate.
Daily task remuneration	- the remuneration for a completed daily task.
Labour-intensive construction	- the economically efficient employment of as great a portion of labour as is technically feasible to produce as high a standard of construction as demanded by the specification and allowed by the funding available, thus the effective substitution of labour for equipment. (Note: This definition is not Contract specific, but applies to the project as a whole. This Contract is a part of such a project).

PSA3 MATERIALS**PSA3.1 Supply of Materials**

The Contractor will be responsible to supply all the materials necessary for the proper execution of the works. He shall also be fully responsible for quality of materials used and/or installed.

PSA4 PLANT (Clause 4.3)

Except where the use of plant is essential in order to meet the specified requirements by the Due Completion Date, the Contractor shall use only hand tools and equipment in the construction of those portions(s) of the Works that are required in terms of the Project Specifications to be constructed using labour intensive construction methods.

PSA5 CONSTRUCTION**PSA5.1 Setting Out of the Works**

Where labour-intensive works are specified, the Contractor shall also be responsible for the setting out of daily tasks.

PSA6 TESTING (Clause 7)

- (a) All test results obtained by the Contractor in the course of his process control of the Works shall be submitted to the Engineer or his Representative prior to requesting inspection of the relevant portions of the Works. Any request for inspection shall be submitted on the prescribed forms that are appended as annexures to the Specifications.
- (b) The Contractor shall make suitable arrangements for process control prior to commencement with the Works. Should he intend using site personnel for this purpose he shall ensure that suitably trained and competent personnel take charge of the necessary test work, and that the necessary equipment is at their disposal prior to commencement of the Works. Failure to comply with these requirements shall be just cause for the Engineer to order suspension of the Works without additional remuneration in terms of Clause 42 of the Conditions of Contract, or for him to recommend determination to the Employer in terms of Clause 58 thereof.
- (c) The Contractor shall deliver to the Engineer, for his consideration, quality assurance programmes (as obtained from all the Contractor's proposed suppliers of pipes, valves and specials) prior to the Contractor's appointment of any suppliers.

PSA7.1 Instructions by the Engineer

Site instructions by the Engineer, addressed to the Contractor at his office on the Site, will be numbered consecutively and will be deemed to have been received by the Contractor's Representative unless a break in the sequence of number is brought to the notice of the Engineer in writing immediately.

PSA7.2 Site Diary

A site diary, which will be supplied by the Engineer, must be filled in on a daily and submitted to the Engineer on a monthly basis. No claims will be considered without the site diary's schedule properly completed (on a daily basis) and submitted.

PSA8 SITE MEETINGS

The Contractor and his authorised representative shall attend all meetings held on the Site with Employer and the professional team at dates and times to be determined by the Engineer. Such meetings will be held to evaluate the progress of the Contract, and to discuss matters pertaining to the Contract which any of the parties represented may wish to raise. It is not the intention to discuss day-to-day technical matters at such meetings.

PSA9 PAYMENT (Clause 8.2)

Monthly Progress Payment Certificates shall be submitted to the Engineer's Representative on Site not later than the 15th of each month (or on the last working day prior to this date) in order to allow for checking and reconciliation of all quantities, rates, extensions and additions in the certificate. Each progress payment certificate shall include work executed or reasonably expected to be executed up to the 30th day of the specific month. The Engineer's Representative shall have a period of five (5) calendar days to review the draft certificate in collaboration with the Contractor. All quantity calculations and certificates submitted by the Contractor for checking shall be in accordance with the standard formats that are included in Section 4.4C.

Upon agreement by the Engineer's Representative by not later than the 20th of each month, the certificate shall be submitted by the Contractor in a neat typed form in accordance with the prescribed format, and with the correct spelling, to the Engineer by not later than the 25th of each month (or on the first working day thereafter), together with four additional copies, for certification.

Where day works have been instructed by the Engineer, the Contractor shall submit the returns to the Engineer for signature and approval within twenty-four (24) hours of the end of the working day on which the work was executed. Daywork returns shall be submitted on the standard format. Failure to comply with the terms of this clause will result in non-payment for such day works.

Commissioning forms must be attached to all invoices and submitted to the engineer for the approval of the payment certificates.

The tax invoice submitted with the certificate shall be dated the 1st of the month following the period certified. All costs for the preparation and submission of progress certificates shall be borne by the Contractor.

PSA10 REPORTS

The submission of each monthly payment certificate shall be accompanied by a completed Equipping Report.

This report is a pre-requisite for the approval of each monthly payment certificate and shall be completed in full to illustrate all work completed the preceding month, as well as work in progress at the time of submission of the report.

Each of these reports must be accompanied with the relevant, completed appurtenant Borehole Schedules (refer to the Annexures). Relevant daywork reference must be attached to each Equipping Schedule.

Labour intensive activities must be reported separately.

PSA11 SUMS STATED PROVISIONALLY (Clause 8.5)**PSA11.1 Contingencies**

No provisional sum has been included for contingencies. No percentage mark up will be applicable to any payments made using contingency money other than those included in prices for variations determined in terms of Clause 39 of the Conditions of Contract.

PSA11.2 Acceptance Control Testing of Earthworks

A Prime Cost Item has been included in Schedule 1 for acceptance control testing of earthworks ordered by the Engineer to be undertaken by a commercial laboratory. Payment will be based on the actual invoicing by the laboratory to the Contractor. In addition to the above-mentioned amount, provision is made in Schedule 1 for a mark-up on any payments made by the Contractor in this regard. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for of the Conditions of Contract. In addition to the above amount, provision is made in Schedule 1 for a mark-up on any payments made by the Contractor. This mark-up shall be regarded as full compensation for overheads, charges and profits as provided for of the Conditions of Contract.

PSA11.3 Electrical Connection Fees

A prime cost has been included in Schedule 1 for payments to Eskom in respect of electrical connection fees for borehole equipment. In addition to the above-mentioned amount, provision is made in Schedule 1 for a mark-up on the connection fees paid. This mark-up shall be regarded as full compensation for overheads, changes, administration and profits as provided for of the Conditions of Contract.

PSA11.4 Specialist Contractor

A prime cost has been included in Schedule 1 for payments made to Specialist Contractors (agent, contractor, engineer or engineer appointed as agent for the employer). In addition to the above-mentioned amount provision is made in Schedule 1 for a mark-up on the Specialist Contractors paid. This mark-up shall be regarded as full compensation for overheads, charges, administration and profits as provided for of the Conditions of Contract.

PSA11.5 Nominated Sub-Contractors

Provision is made in Schedule 1 for a mark-up on nominated Sub-Contractors in respect of overheads, charges and profit for assisting, training, co-ordinating and supervision of a nominated Emerging Sub-Contractor, who is to be employed under this programme.

PSA12 ADJUSTMENT OF PRELIMINARY AND GENERAL ITEMS DUE TO RAIN

Should the period for completion be automatically extended due to abnormal weather conditions occurring during execution of the Contract as provided for in the Project Specifications, no adjustment to the total for time-related preliminary and general items will be applicable.

PSA13 ADJUSTMENT OF PRELIMINARY AND GENERAL TIME-RELATED ITEMS

An approved extension of time will qualify the Contractor to receive additional payment for each relevant time related item at a unit rate based on the sum originally Bided for such item, and which shall be fair and reasonable as contemplated in Clause 40 of General Conditions of Contract.

PSA14 ADJUSTMENT OF PRELIMINARY AND GENERAL ITEMS DUE TO INTERRUPTION IN WORK SCHEDULE

Should the period of completion be automatically extended in terms of clause PS5.3 as a result of interruption in the contractors work schedule during execution of the contract, no adjustment to the total for time related preliminary and general items would be applicable. Time related preliminary and general items will be paid only if the Contractor has been established on site during a specific period. Therefore, if the Contractor was not established on site, time related P & G-items will not be paid. If he was on site for only a limited period during a specific month, time related P&G items will to be paid in full for such a month.

PSA15 PAYMENT FOR ESTABLISHMENT OF FACILITIES AND ADDITIONAL ESTABLISHMENT OF FACILITIES ON THE CONTRACTS

Note: The contractor shall only be paid for site establishment by means of an official Departmental order. Site establishment can only be claimed once per site.

Transport Rates are applicable for small work - LDV 2 x 4 WD, LDV 4x4 WD. (See Price Schedule 2, paragraph 2.2.14.)

PSA15.1 Amend clause 8.3.2 of SANS 1200 A as follows:

Change the heading of clause 8.3.2 to:

Site establishment cost and other movement cost will be deemed to from Province/Subprovince Office including all preliminary and general costs be included in the rates Bided for various items of work. Only transport expenditures can be claimed for.

Important Note:

- (a) Transport cost outside the borders Nationwide cannot be claimed for except “Nominated Specialised Services”. (Refer to Section 4.2, Portion 1, paragraph PSA 11.4).
- (b) The contractor will also not be paid any additional site establishment costs or inter-borehole movements, when the contractor moves into a region or province to re-do defective or maintenance work in that region.

PSA15.2 Amend clause 8.3.4 of SANS 1200 A as follows:

Change the heading of clause 8.3.4 to:

"Remove Contractor's site establishment on completion of contract or interim de-establishment (on instruction of the Engineer)" - for the contractors own cost.

PSA15.3 Include the following Clause 8.3.6:

Village Movement / Site Movement:

All movements ordered by the Engineer, shall be priced as follows:

- (a) Only transport cost is applicable.
- (b) Other movement cost will be deemed to be included in the rates Bided for various items of work.

PSA15.4 Include the following clause 8.3.6

"Establishment cost payable to the Contractor on re-establishment."

This item must cover all costs incurred by the Contractor when re-establishing after a previous de-establishment on interaction of the Engineer.

Refer to PSA 15.3.

PSAB ENGINEER'S OFFICE**PSAB4 SURVEY ASSISTANT** (Clause 5.5) (when required by the "Engineer")

One suitably educated Assistant shall be made available for the sole use of the Engineer's Representative for the duration on the Contract. The assistant may also be required to fulfil the function of Community Liaison Officer during the Contract, should the Engineer consider this arrangement to be in the interests of the Employer. The Survey Assistants may therefore have to be appointed from the local communities.

- | | |
|--|---------|
| (a) Steel pegs, 300 mm long and 12 mm dia | 120 No. |
| (b) Measuring wheel | 1 No. |
| (c) Tripod holders for ranging rods (heavy duty) | 2 No. |
| (d) Optical square (Sokkisha or Wild), complete with telescopic aluminium rod and levelling bubble | 1 No. |
| (e) 100m long 50 kg strength fish line | 1 No. |
| (f) One metre long spirit level | 1 No. |
| (g) DCP | 1 No. |

PSC SITE CLEARANCE**PSC1 DISPOSAL OF MATERIAL** (Sub-Clauses 3.1 and 8.2.1)

Materials arising from clearing and grubbing shall be disposed of as may be ordered by the Engineer. Trees and stumps necessarily removed shall not be burnt unless authorised by the Engineer, but shall be cut and stacked at areas designated by the Engineer.

PSC2 AREAS TO BE CLEARED AND GRUBBED (Clause 5.1)

The areas to be cleared and grubbed will be indicated by the Engineer. Should a portion or the whole of the site have been cleared and grubbed by nature or by others prior to the start of construction, then no clearing and grubbing will be ordered or payment made with respect to the applicable portion of the site.

PSC3 PRESERVATION OF TREES AND SHRUBS (Sub-Clause 5.2.3)

The penalty in respect of every individual tree and shrub designated as a tree or shrub to be preserved that is damaged or removed unnecessarily by the Contractor, shall be R1 000. Trees that fall within areas upon which the Works are to be constructed or within areas that the Contractor must occupy for the proper construction of the Works will not be designated for preservation.

PSC4 OVERHAUL (New Sub-Clause)

No overhaul will be payable on the disposal of material arising from clearing and grubbing.

PSDA EARTHWORKS (SMALL WORKS)**PSDA1 FREEHAUL AND OVERHAUL (Clause 5.2.5)**

The freehaul distance for all material to be imported or spoiled shall be considered as 1 km for mechanically driven vehicles and a 200 m for wheelbarrows from the outer ring of houses which defines the village, or as agreed upon in the specified case of "wheelbarrow haul".

PSDA2 BORROW PITS (Clause 5.2.2.2)

Borrow materials shall be obtained from designated borrow pits approved by the Engineer.

PSDA3 DISPOSAL OF SURPLUS MATERIAL

All surplus or unsuitable materials arising from excavation shall be spoiled and spread where indicated by the Engineer. The Engineer shall determine the point of spoil roads that he may require for the construction of the works. No additional payment will be made in this regard.

PSDA4 HAUL AND SPOIL ROADS

The contractor shall be responsible for the provision of all haul and spoil roads that he may require for the construction of the works and that the engineer may approve. No additional payment will be made in this regard.

PSDB EARTHWORKS (PIPE TRENCHES)**PSDB1 MATERIALS** (Clause 3)**PSDB1.1 Methods of classifying** (Clause 3.1)

Replace the contents of this sub-clause with the following:

PSDB1.1.1 Save and except in respect of those portions of the Works which are specified in Portion 1 of the Project Specifications to be executed utilising Labour Intensive Construction Methods, the Contractor may use any method he chooses to excavate any class material, but his chosen method of excavation shall not determine the classification of the excavation. The Engineer will determine the classification of the materials.

PSDB1.1.2 The classification will be based on the specified construction methods, inspection of the material to be excavated and on the criteria given in PSDB1.2 below, as applicable.

PSDB1.1.3 Where the utilisation of Labour Intensive Construction Methods is specified in Portion 1 of the Project Specification for certain classes of excavation only, the material for those classes of material to be excavated using Labour Intensive Construction Methods will be classified in terms of PSDB1.2.2 and for those classes of excavation which are not required to be executed by Labour Intensive methods, classification will be based on the criteria given in PSDB1.2.1

(i.e. Where it is specified that the excavation of soft materials only shall be executed using Labour Intensive Construction Methods, the classification of the soft material to be so excavated will be based on the criteria given in PSDB1.2.2(a) and the Contractor will be required to excavate all such soft material by Labour Intensive methods. However, when the material is classified in terms of PSDB1.2.2(b) to be "intermediate" and is thus no longer required to be excavated by Labour Intensive methods, will be based on the criteria given in PSDB1.2.1 (thus a material classified as "intermediate" in terms of PSDB1.2.2(b) may in terms of PSDB1.2.1 be deemed to be "soft" and will be measured and paid as such under such circumstances.).

PSDB1.1.4 All tools and equipment referred to in PSDB1.2 shall be in good mechanical and operational condition.

PSDB1.1.5 "Efficiently" as used in PSDB1.2.2(a) - (c) shall be taken to mean "in a manner that can be reasonably expected of a Contractor, having regard to the production achieved".

PSDB1.1.6 The classification of material other than "soft excavability" shall be agreed upon before excavation may commence.

PSDB1.1.7 The Contractor shall immediately inform the Engineer if and when the nature of the material being excavated changes to such an extent that a new classification is warranted for further excavation. Failure on the part of the Contractor to advise the Engineer in good time shall entitle the Engineer to reclassify, at his discretion, such excavated material.

PSDB1.2 Classes of Excavation (Sub-Clause 3.1)

Add the following new sub-clause:

PSDB1.2.1 Classes of excavation where Labour Intensive Construction Methods are NOT specified

The excavation of material will, in the case of work which is NOT required in terms of the Contract to be executed utilising Labour Intensive Construction Methods, be classified according to SANS 1200D for the purpose of measurement and payment.

Add the following new sub-clause:

PSDB1.2.2 Classes of excavation where Labour Intensive Construction Methods are specified

The excavation of material will, in the case of work which is required in terms of the Contract to be executed utilising Labour Intensive Construction Methods, be classified as follows for purposes of measurement and payment:

(a) Soft excavation

(i) Class 1

Soft excavation Class 1 shall be excavation, including the excavation of boulders not exceeding 0.04 m^3 , in material that can be excavated and removed from the excavation by an average able bodied labourer or group of such labourers, at a rate of not less than 2.5 m^3 per 9.25 hour working day per labourer, using only a suitable shovel. The average volume/task can be accepted as 3.0 m^3 per labourer per day.

(ii) Class 2

Soft excavation Class 2 shall be excavation, including the excavation of boulders not exceeding 0.04 m^3 , (excluding soft excavation Class 1) in material that can be excavated and removed from the excavation by an average able bodied labourer or group of such labourers, at a rate of not less than 2.0 m^3 and not more than 2.0 m^3 per 9.25 hour working day per labourer, using only picks, "gwalas", shovels and similar hand tools. The average volume/task can be accepted as 2.5 m^3 per labourer per day.

(ii) Class 3

Soft excavation Class 3 shall be excavation, including the excavation of boulders not exceeding 0.04 m^3 (excluding soft excavation Class 2) in material that can be excavated and removed from the excavation by an average able bodied labourer or group of such labourers, at a rate of not less than 1 m^3 and not more than 2.5 m^3 per 9.25 hour working day per labourer, using only picks, "gwalas", shovels and similar hand tools, The average volume/task can be accepted as 2.0 m^3 per labourer per day.

(b) Intermediate excavation

Intermediate excavation shall be excavation (excluding soft excavation) in material which requires ripping or loosening by mechanical means prior to removal of the loosened material utilising the methods as described in PSDB1.1.1(a).

(c) Hard rock excavation

Hard rock excavation shall be excavation of boulders not yet decomposed exceeding 0.4 m³ and excavation in solid rock occurring in bulk or in banks or ledges, which requires loosening or breaking up by drilling, wedging, splitting or blasting or by other approved quarrying methods, prior to being excavated and removed from the excavation utilising only picks, "gwalas", shovels and similar hand tools.

(NOTE: Such excavation generally includes materials such as formations of unweathered rock that can be removed only after blasting.)

The Engineer will instruct for which portions of the Works, based on the evidence provided from trial holes excavated at approximately 200 m spacing by the Contractor for this purpose, will be executed utilising Labour Intensive Construction methods. The Trial hole shall be excavated to trench depth utilising a Cat 416 Backactor or similar.

PSDB2 PLANT

PSDB2.1 Excavation Equipment (Sub-Clause 4.1)

Replace the contents of this sub-clause with the following:

- (a) To the extent that the provisions of the Specifications permit the use of mechanical plant and equipment in the excavation of trenches, the Contractor may use trenching plant that will excavate to a width such that the side allowance does not exceed the appropriate value specified in 5.2 by more than 50%, except that where in terms of the Project Specifications or of the Drawings, the base width of a trench for a pipeline or a portion of a pipeline is not to exceed the maximum base width or a stated value, the Contractor may use trenching plant which will produce the required trench width or he shall accept the responsibility for all costs incurred in strengthening the relevant pipeline.

PSDB3 ACCOMMODATION OF TRAFFIC (Sub-Clause 5.1.3)

Traffic must be accommodated along the lengths of the pipelines which fall within or adjacent to any road reserve.

The Contractor shall Bid a lump sum per village in Schedule 3 for accommodating traffic during the duration of the Contract, which sum shall cover all his obligations in this regard, including but not limited to temporary barricades; the erection and re-erection of existing and/or temporary traffic signs; lights and flagmen for the guarding and protection of the Works; and for making all necessary arrangements with the applicable traffic authorities. Payment shall be made monthly pro-rata to the overall progress of the Works.

If crossing of the road in half widths is allowed, the road shall remain continuously open to traffic. The Contractor shall make provision to ensure the safe passage of traffic using this public road whilst installing the pipe through the road, and to ensure that any disruption to public is kept to a minimum providing safe detours when so instructed by the Engineer. Each half width shall be completed in one day. No open trenches will be allowed overnight. If the half width is not completed by 16:00 the trench shall be backfilled, in which case the Contractor shall re-excavate the trench at a later stage to complete the work at his own expense. All detours and signs shall be erected and maintained in accordance with the latest issue of Road Signs Note 13 as issued by CSRA and CUTA.

PSDB4 EXSISTING SERVICES (Sub-Clauses 5.1.4)

Where any existing service occurs within the specified trench excavation, and the presence of such service is known before being uncovered, then the protection of the service will be scheduled and measured as provided for in Clause 8.3.5 of 1200DB. Only known services (as defined in Clause 5.4 of 1200A) shall be measured for payment.

Where an unknown existing service is damaged during construction, and the Engineer orders that the Contractor should undertake the repair of such service, then such repair will either be measured and paid as day works or alternatively as a contractual variation in terms of Clause 40 of the General Conditions of Contract.

No construction activity which may affect the integrity of telephone or electrical poles or stays may be carried out without the prior written approval of the Engineer, which approval shall only be given subject to the acceptance of a modus operandi that will ensure the integrity of such structures during construction.

PSDB5 TRENCH WIDTHS (Sub-Clauses 4.1 and 5.2)

Trenches in general shall not exceed the widths laid down in Sub-Clause 8.2.3. If trenches exceed the specified width the Contractor shall be liable for the cost of measures which may be required as a result of the additional trench width.

PSDB6 MINIMUM BASE WIDTH (Sub-Clause 5.2)

Side allowance for pipes of diameter 125 mm or more (Sub-clauses 5.2 and 8.2.3):

The minimum base width of trench for pipes of external diameter less than 125 mm but larger than 70 mm laid at a depth of 1,5 m or less shall be 550 mm.

The minimum base width of trenches for pipes of external diameter less than 70 mm laid at a depth of 1,0 m or less shall be 400 mm.

The minimum base width of trenches where labour-based excavation is concerned shall be at least 150 mm on either side of the pipe's outer diameter to allow proper compaction of backfilling materials.

PSDB7 TRENCH BOTTOMS (Sub-Clause 5.5)

Replace the first paragraph of this sub-clause "Material thatcompacted as directed" with the following:-

Where a firm foundation cannot be obtained at the grade indicated due to soft or unsuitable material, the Engineer may instruct the Contractor to remove such unsuitable material and to backfill the excess depth with approved selected material or concrete, as directed by the Engineer in each particular case, at the cost of the Employer. Backfill other than concrete, shall be placed in layers of 100 mm uncompacted thickness, each layer thoroughly compacted to the entire satisfaction of the Engineer, to provide adequate support for the pipe bedding to be placed on top of it.

Should the Contractor remove more material than is required to secure the proper grade of the pipeline, the Contractor must, at his own cost, backfill the excess excavation with approved selected material or concrete as directed by the Engineer in each particular case.

PSDB8 DISPOSAL OF EXCAVATED MATERIAL (Sub-Clauses 5.6.3 and 5.6.4)

All surplus or unsuitable materials arising from excavation shall be spoiled and spread within or adjacent to the Site of the Works or when ordered by the Engineer be spoilt at a spoil site established by Contractor.

PSDB9 FREEHAUL AND OVERHAUL (Sub-Clause 5.6.8)

No overhaul will be payable on earthworks for pipe trenches.

PSDB10 AREAS SUBJECTED TO TRAFFIC LOADS (Clause 5.7.2)

The requirements of Clause 5.7.2 shall apply only to pipes and sleeves crossing streets or paved areas and pipes running parallel to the road as described below.

All service trenches running parallel to the road of which the roadside edge of the trench is located less than 1,4 m away from the edge of the travelled way, will be subject to the requirements for the above mentioned clause.

The measurement and payment will apply to the full trench width. Pipes and sleeves crossing streets or paved areas will be measured and paid for to a length equal to the width of road or length of pavement crossed plus 1,4 m either side of the travelled edges.

Compaction of other pipe trenches running parallel to the road shall be considered areas subject to traffic loads only where instructed by the Engineer in writing. The volume will be computed from the minimum base width determined in accordance with Sub-Clause 5.2 and the depth from the top of the back fill to the top of the bedding as specified in Sub-Clause 8.3.3.1.

PSDB11 REINSTATEMENT OF EXISTING BITUMEN SURFACED ROADS (Clause 3.6 and 5.9.4)

Pipe trenches through the existing bitumen surfaced roads shall be reinstated with a 150 mm upper selected subgrade layer compacted to 93% mod AASHTO density, followed by a 150 mm sub base layer compacted to 95% mod AASHTO density and a 150 mm graded crushed stone base compacted to 98% of mod AASHTO density. The road shall be provided with a 25 mm thick asphalt seal.

The upper selected subgrade layer shall have a CBR of at least 15, a grading modulus of at least 0,75 and a maximum PI of 12. The sub base shall conform to SANS 1200 ME and the base to SANS 1200 MF.

PSDB12 MEASUREMENT AND PAYMENT (Clause 8.3.2)**PSDB12.1 Basic Principles** (Clause 8.1)

Insert the following heading for Clause 8.1.2:

"Trenches not required to be excavated by Labour Intensive Construction methods"

Add the following new sub-clause: (Clause 8.1.5)

"Works required to be executed utilising Labour Intensive Construction methods"

Separate items will be provided for works covered by this Specification which are required to be executed by Labour Intensive Construction methods and for works for which the utilisation of such methods is not required.

The trench depth increments referred to in Clause 8.1.2(b) and the trench depth increment for 8.1.5 shall be:

- (a) up to 1.5 m in depth

Trenches shall be measured volumetrically, irrespective of length.

Measurement and payment for works covered by this Specification and required to be executed utilising Labour Intensive Construction (LIC) methods shall, unless otherwise stated, be *mutatis mutandis* in accordance with the provisions of SANS 1200DB as amended in this Project Specification.

PSDB12.2 Excavation (Sub-Clause 8.3.2)

Excavate, in all materials for trenches 0 - 1,0 m wide, backfill, compact and dispose of surplus material utilising Labour Intensive Construction methods up to 1,5 m in depth m^3

Extra over the above for

- | | | | |
|-----|-------------------------|-------------------|-------|
| (1) | Soft excavation Class 2 | (refer PSDB1.2.2) | m^3 |
| (2) | Soft excavation Class 3 | (refer PSDB1.2.2) | m^3 |
| (3) | Intermediate excavation | (refer PSDB1.2.2) | m^3 |
| (4) | Hard rock excavation | (refer PSDB1.2.2) | m^3 |

Excavate, in all materials for trenches 0 - 1,0 m wide, backfill, compact and dispose of surplus material utilising Conventional Construction methods

- | | | |
|-----|--------------------|-------|
| (a) | Up to 1,5 in depth | m^3 |
|-----|--------------------|-------|

Extra over the above for:

- | | | |
|-----|--|-------|
| (1) | Intermediate material | m^3 |
| (2) | Hard rock excavation | m^3 |
| (3) | Backfill and compact by means of Labour Intensive Construction methods | m^3 |
| (4) | Disposal of surplus material by means of Labour Intensive Construction methods within 20 m from the source of spoil material using wheel barrows | m^3 |

Backfill should be in 200 mm thick layers compacted to 90% Mod AASHTO.

Payment for the excavation and backfilling of trenches shall be made at the Bided rates and at the following stages of the construction:

- (i) Upon completion and approval of the trench bottom, prior to bedding: 40%
- (ii) Upon completion and approval of top of selected backfill: 70% (cumulative)
- (iii) Upon completion and approval of the mainfill: remaining 30%.

PSDB12.3 Excavation of Trial Holes

Excavation of trial holes as described in PSDB1.2.2 will be measured by number and shall include for backfilling after inspection.

PSDB12.4 Stone Bedding

Stone bedding will be measured per cubic metre under the appropriate item in SANS 1200LB. Type A bedding (crushed stone wrapped in a geotextile blanket) shall be measured per linear metre along the centreline of the trench. The provision, operation and removal of (a) de-watering pump where authorised by the Engineer will be measured as dayworks under the appropriate item in Schedule2.

PSDK GABIONS AND PITCHING**PSDK2 PITCHING** (Sub-Clause 3.2.1.20)

Type of pitching shall be Ordinary Stone Pitching, unless otherwise instructed by the Engineer.

PSGA CONCRETE (SMALL WORKS)**PSGA1 CEMENT** (Sub-Clause 3.2.1)

Only the use of Ordinary Cement to SABS 471 will be permitted.

PSGA2 CONCRETE FINISHES (Sub-Clause 4.4.2)

Concrete against which earth will be backfilled shall be classified as rough. All exposed concrete surfaces shall be classified as smooth. Degree of accuracy II shall prevail.

PSGA3 STRENGTH CONCRETE (Sub-Clause 5.4.1.5)

The grade of concrete and nominal size of aggregate shall be as specified on the Drawings. The successful Bidder will be required to submit samples of the coarse and fine aggregate, which he proposes using, to the Engineer's Representative(s) for tests regarding the suitability of such aggregates. The Contractor shall prepare trial mixes. These mixes shall be designed for vibration. All data and reports prepared by the Contractor shall be submitted to the Engineer for information and approval prior to the commencement of concreting operations.

PSGA4 ANCHOR AND THRUST BLOCKS

At tees, bends, terminal valves, end caps, and where otherwise directed, anchor/thrust blocks shall be constructed to dimensions ordered, shown on the Drawings or agreed to by the Engineer. Unless otherwise specified, anchor/thrust blocks and pedestals shall be constructed of prescribed mix 15/37,5 concrete.

The concrete shall be well punned round the pipe and, if in trenches, against the undisturbed faces and bottom of the trench. Backfilling behind or under thrust faces will not be permitted. Excess excavation shall be replaced with the prescribed mix concrete given above for anchor/thrust blocks at the Contractor's expense, unless an item is scheduled to cover payment of overbreak. Care shall be taken to leave the joints accessible. No anchor/thrust blocks and pedestals shall be concreted until the approval of the Engineer has been obtained.

Anchor and thrust blocks will be measured by volume of concrete; the rate Bided shall include for any formwork required constructing the block.

Should the Contractor offer an alternative method of coupling involving flexible joints, he shall design suitable thrust and anchor blocks in order to prevent movement of the pipeline under operating and test conditions. The working and test pressure to be used by the Contractor for the calculation of anchor and thrust blocks shall be in accordance with the design information that is issued together with the Bid. The earth bearing pressure to be used for the calculation of anchor and thrust blocks shall be based on field tests. The factor of safety to be used in calculating the above shall be 2.5.

PSGA5 GROUTING TO MACHINE AND STRUCTURAL BED PLATES (Sub-clause 5.5.13)**PSGA5.1 Materials**(a) Water

Water for grout shall comply with the requirements given in sub-clause 3.3 of SANS 1200G.

(b) Aggregates

Notwithstanding the requirements of Sub-clause 3.4.1 of SANS 1200G, the grading of fine aggregate (sand) and coarse aggregate (stone or pea gravel) shall conform to the gradings given in Tables 1 and 2, respectively, below.

(c) Cement

Cement shall be ordinary cement complying with SABS 471.

(d) Admixtures

Admixtures shall comply with the requirements of Sub-clause 3.5 of SANS 1200 G, and shall have a proven record of satisfactory performance.

(e) Proprietary Grouting Materials

Unless otherwise approved by the Engineer, Proprietary Grouting Materials shall be obtained ready mixed in sealed pockets as supplied by the manufacturers.

Table 1 - Sand		Table 2 - Stone or Pea Gravel	
1	2	1	2
Test sieve Nominal aperture size, mm	%Passing (by mass)	Test sieve aperture size, mm	%Passing (by mass)
9,5	100	9,5	100
4,75	95-100	4,74	95-100
1,18	45-65	2,36	0,5
0,3(300)	5-15		
0,15(150)	0,05		

* cement (ordinary, rapid-hardening, and sulphate-resisting).

PSGA5.2 Preparation and Procedures

- (a) Before a machine or structural bedplate is placed on the concrete the following shall be carried out:
 - (1) All defective concrete, laitance, dirt, oil, grease and loose material shall be removed from the concrete foundation by bush-hammering, chipping, or other means until sound clean concrete is obtained. The surface of the foundation shall be scabbled, but shall not be so rough as to interfere with proper placing of the grout. All foundation bolt sleeves shall be cut out, or cut off flush if the sleeves cannot be removed. The top of the foundation shall be reshaped if necessary.
 - (2) The underside of each steel base, particularly in the bearing areas, shall be cleaned and any burrs and ragged edges removed before the base is placed in its final location.
 - (3) All holding-down bolt sleeves shall be thoroughly cleaned of any materials that may prevent the grout from flowing freely to the bottom of the bolt sockets.
- (b) The base shall be properly aligned and levelled and shall be maintained in that position during grouting.
- (c) After the machine or structural bedplate has been placed the following precautions shall be observed:
 - (1) Shimming shall be kept to a minimum. Steel plates shall be used for packing and shall be ground to the required thickness, where necessary.
 - (2) Before grouting is started all loosed dirt, oil, grease and other foreign matter on the surface of the foundation, the underside of bed plates, and in the bolt holes shall be removed by means of compressed air or other approved means. The surface of the foundation slab shall be thoroughly saturated with clean water and free water shall be removed from the surface and the boltholes just before the grout is placed.
 - (3) The grouting shall not be carried out until the alignment of all units to be grouted has been checked and approved by the Engineer.
 - (4) Special care shall be taken with grouting in hot or cold weather to ensure proper setting and gain of strength and, in the case of Proprietary Grouting Materials, by having ice or hot water available, as the case may be, in accordance with the instructions of the manufacturer. Enclosures shall be provided for the grout such that, until it has set, its temperature will be in the range 15-27°C. Shields to protect the grout from the sun and from hot winds shall be provided by the Contractor when so ordered.

PSGA5.3 Formwork

Formwork for grouting shall comply with the applicable requirements of Sub-clause 5.2 of SANS 1200 G. Forms shall be caulked where necessary. Adequate clearance between forms and bed plates shall be provided to enable the grout to be worked into place.

PSGA4.4 Mixing (All free-flowing grouts except epoxy grouts)

The grout shall be mixed to a homogenous uniform mixture and delivered ready for placing at a temperature between 15°C and 25°C.

The materials and water shall be mixed in a mortar mixer for at least 3 min. or, in the case of small jobs only, shall be thoroughly mixed by hand, the entire mass being turned over enough times to ensure even distribution of its components.

The mixing shall be done as close as possible to the place(s) where the grout is placed. No more grout shall be mixed at any one time than can be placed in a period of 20 min. After the grout has been mixed it shall not be retempered by the addition of water.

PSGA4.5 Grouting (All free-flowing grouts except epoxy grouts)

The grout shall be placed quickly and continuously to avoid the undesirable effects of over-working. (These effects are segregation, bleeding and breaking-down of initial set). The method of placement shall be subject to approval. The means of placing the grout shall be such that the grout will completely fill the space to be grouted, will be thoroughly compacted, will be free of air pockets and will have evenly distributed contact over an area in excess of 80 % or, in the case of expanding grout, 95 % of the bearing area of the item to be supported.

Wherever applicable, grout shall be placed from one side only and where this is not practicable, care shall be taken to ensure that any entrapped air is released. After the grout has taken its initial set:

- (a) the forms shall be removed;
- (b) excess grout shall be so cut away as to leave a smooth and neatly finished job;
- (c) except where the grout is intended to provide resistance to side thrust, all edges shall be trimmed at 45°C to the vertical, from the bottom edge of the bed plate; and
- (d) all excess grout on or about the bed plate shall be removed.

Damage to paintwork, if any shall be repaired within 24 hours. Packing plates, shims and other levelling devices shall remain in position.

PSGA4.6 Dry-packed grout (Standard dry sand and cement grout)

Dry-packed grout shall have a minimum compressive strength at 28d of 20 Mpa. The quantity of water after placing shall be kept to a minimum consistent with placing conditions, and the cement, sand and, where applicable, pea gravel proportioned by mass shall be as follows:

- (a) Where the clearance between bed plate and foundation is 25 mm or less: 1 part of cement, and 2 parts of sand;
- (b) Where the clearance exceeds 25 mm: 1 part of cement, 1 part of sand and 1 part of pea gravel. Dry-packed grout shall be rammed by means of tamping rods against form work placed along three sides of the bed plate.

PSGA4.7 Non-shrink grout with metallic aggregate

The manufacturer instructions shall be observed when non-shrink grout with metallic aggregate is used.

Where the clearance between the bed plate and the foundation is less than 50 mm a sand-based mix shall be used. Where the clearance exceeds 50 mm the Engineer may order a mix with a base of sand plus pea gravel to be used.

PSGA4.8 Expanding grout with powdered aluminium additive

The manufacturer instruction shall be observed when the expanding grout powdered aluminium additive is used.

Where the clearance between the bedplate and the foundation is less than 25 mm, a sand-based mix shall be used. Where the clearance exceeds 25 mm the Engineer may order mix with a base of sand plus pea gravel to be used.

Each batch shall be mixed for at least 6 minutes after the powdered aluminium has been added. Where a ready-mixed grout is used, the powdered aluminium shall be added at the placing site and the batch mixed as specified. Grout shall be placed within 45 minutes after the addition of the powdered aluminium. The Contractor shall not use powdered aluminium additive when the ambient temperature is below 5°C.

PSGA4.9 Epoxy grout (epoxy mortar type only)

The manufacturer's instructions shall be observed when an epoxy grout is used.

PSHA STRUCTURAL STEEL (SMALL WORKS)**PSHA1 GRADE OF STEEL** (Sub-Clause 3.1.1)

Structural cold-formed steelwork to be to Grade 43A or 43B with the minimum properties as tabled in Table B-2 of SABS 0162-1982.

Structural hot-rolled steelwork to be to Grade 300W with the minimum properties as tabled in "Steel design date: No. 6" of the South African Rolled Steel Producers Coordinating Council and the South African Institute of Steel Construction.

PSHA2 SHOP DRAWINGS (Sub-Clause 5.1.2)

The contractor is to provide shop details.

Steelwork generally of welded construction with site connections bolted:

All holes 18 dia for M16 bolts

All gussets ex 8 mm U.O.S.

All welds, 6 mm fillet

The Engineer must be notified, (at least 72 hours before hand) of the completion of the fabricated steelwork at the contractors workshops, to enable him to make an inspection if he so desires. The fabricated steelwork, thus to be inspected shall be in its prepared specified state immediately before the application of prime coat painting.

PSHA3 WELDING (Sub-Clause 5.3.4)

Delete this clause in its entirety and add the following clause:

Welding shall be done in accordance with the relevant requirements of SABS 0162 BS5135 and AWS.D.1/18 (American Welding Society).

Welding shall be Grade B welding.

The qualification of welders shall be in accordance with the relevant clauses of the above standards, and specifically SABS 044 Part III and shall be Grade 1 welders. Grade 2 welders shall be permitted only with the Engineer's approval.

The Contractor shall provide evidence, acceptable to the Engineer, that welding procedures and welders have been tested in accordance with the requirements of AWS D1.1.

PSHA4 PROTECTIVE TREATMENT (Sub-Clause 5.3.9)**PSHA4.1 Shop Painting**

- (a) Steelwork after fabrication shall be wire brushed to a finish equal to or better than Grade St3 or SIS 05 59 00.

- (b) Within 4 h after the completion of wire brushing, 2 coats of an approved primer such as a Type II. Grade 2 red lead, on a zinc chromate or red oxide (see Subclause 3.7 of SANS 1200 H) shall be applied to provide a dry film of thickness between 25 and 30 micron. Except that red lead shall not be sprayed, a primer may be applied by means of brush, roller, or spray.

PSHA4.2 Painting after erection

- (a) After the erection of steelwork, all areas where the primer coat has been damaged shall be touched up as specified in PSH2.1.
- (b) An intermediate coat of an approved general-purpose alkyd undercoat shall then be applied to provide a dry film of thickness between 25 and 30 micron. The paint may be applied by means of brush, roller, or airless or conventional spray.
- (c) Provided that the undercoat is touch-dry within 2 hours, the finishing coat may be applied the following day. One coat of an approved alkyd enamel, the non-volatile vehicle of which contains at least 24 % phthalic anhydride, shall be applied to provide a dry film of thickness between 25 and 30 micron.
- (d) The total dry film thickness of the paint and primer coats shall be between 70 and 100 micron.

PSL MEDIUM PRESSURE PIPELINES**PSL1 WATER SUPPLY MAINS**

The pipes to be used for pressure mains are as follows:

1. 63 mm and larger - Unplasticised Poly vinyl Chloride (uPVC)
 Fibre Cement (FC)
2. 50 mm and smaller - High density Polyethylene Type IV

Couplings for uPVC pipes to be watertight and be able to withstand the relevant test pressures, unless otherwise indicated. uPVC pipe fittings shall be cast iron or aluminium.

Couplings for HDPE pipe fittings shall be compression fittings only.

PSL2 VALVES (Clause 3.10)

Line valves shall be class 10 cast iron gate valves complying with the requirements of SABS 664. They shall be of the non-rising spindle type, clockwise closing and fitted with caps or hand wheels as shown on the drawings. All gate valves shall have rubber seals.

PSL3 MARKING OF ROUTE AND POSITION

The route and position of major supply mains shall be marked on the surface by Pipeline rout markers as per Drawing No. 9929.00.05D34.

PSL4 HANDLING AND RIGGING (Clause 4.1)**PSL4.1 Transportation**

Fittings, specials and valves shall be protected during transportation and handling against damage caused by impact, dropping, etc.

PSL4.2 Off-loading and storage

Pipes, fittings and specials shall at no time be laid, stacked or rolled directly onto the ground but shall be supported on suitable padded cradles or other approved material near each end of the pipe, fitting or special. Particular care shall be taken where pipes with fitted couplings are handled or stacked to prevent any pressure on the couplings.

PSL4.3 Inspection on delivery

The Engineer's Representative will thoroughly inspect all pipes, fittings and specials delivered to the site but his acceptance of same as being in good condition shall not relieve the Contractor of any of his obligations or responsibilities under this contract. See also Clause PSA6.5 in this regard.

Materials rejected by the Engineer shall be removed from the site within 30 days and shall be replaced by other approved materials by the Contractor at his own expense.

PSL5 STANDARD HYDRAULIC PIPE TEST (Clause 7.3)

Field test pressures shall be 1,5 times the recommended maximum working pressure for the class of pipe and/or valves, specials and fittings being tested.

PSLB BEDDING (PIPES)**PSLB1 BEDDING** (Sub-Clause 3.3)**PSLB1.2 Rigid Pipes**

All steel, clay and concrete pipes shall be laid on a class C bedding as shown on Drawing LB-1 of SANS 1200LB.

PSLB1.3 Flexible pipes

uPVC, mPVC, and polyethylene pipes will be regarded as being flexible and shall be bedded as per Drawing LB-2 of SANS 1200LB.

PSLB2 MATERIAL NOT AVAILABLE FROM TRENCH EXCAVATION (Clause 3.4.2)

Bedding and selected fill materials shall be obtained from trench excavation, other necessary excavations or from borrow pits. The engineer reserves the right to designate alternative sources. He also reserves the right to make a ruling whether special efforts must be made to construct specifically a separate bedding for pipes where the insitu material proved to be of poor quality.

PSLB3 CLASS A BEDDING (Sub-Clause 5.2.1)

Concrete to be used in class A bedding to pipes shall be of grade 20/19.

PSLB4 CONCRETE CASING TO PIPES (Sub-Clause 5.4)

Concrete to be used in the casing of pipes shall be of grade 20/19.

PSLB5 TOLERANCE ON COMPACTION OF BEDDING MATERIAL

Degree of accuracy II shall prevail.

END OF SECTION 4.2

BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SECTION 4.3

PARTICULAR SPECIFICATIONS

BID NO. DWS 52-0816 WTE
RURAL COMMUNITY WATER SUPPLY AND SERVICES
EQUIPPING OF BOREHOLES NATIONWIDE
PARTICULAR SPECIFICATIONS

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PB EQUIPPING OF BOREHOLES**PB1 SCOPE**

This sub-section includes all work related to the installation of borehole equipment including but not limited to the following:

- o Hand pumps
- o Windmills
- o Diesel driven engines
- o Positive displacement pumps
- o Submersible pumps and associated electrical work

The service to be rendered is the provision, installation, erection and commissioning of all the borehole equipment and appurtenant works.

PB2 GENERAL

Depending on borehole test results, the borehole will be equipped upon the Engineer's site instruction. The pump set shall comprise one complete borehole pump, including all pipe work to couple to main pipeline, electric or diesel driven, pulleys, driving belts, etc. The complete installation is to be housed in the standard pump house as detailed on drawing Nos. 125 813/97 ME, 125 815/97 ME and 125 816/97 ME (refer to the list of the specification drawings).

PB3. REMOVAL OF EXISTING EQUIPMENT FROM BOREHOLES

In cases where the boreholes listed are presently equipped (handpump, power head, engine and shelter or windmill), all such equipment shall be carefully dismantled by the contractor and stored securely at the Contractor's camp, all to be handed over to the Employer with the applicable handing over certificates.

Where boreholes are sealed, the Contractor shall remove these entirely and demolish the seals. All such debris shall be dumped at spoil sites indicated by the Engineer.

The Contractor will only be permitted to expose the boreholes immediately prior to equipping such boreholes as instructed by the Engineer and shall at all times exercise great care to prevent the ingress of debris or any foreign material into the borehole.

PB4. DESIGN, MEASUREMENTS AND RECORDS

PB4.1 Prior to the ordering of any materials to be used for the equipping of boreholes, the Engineer shall issue a selection lists to the Contractor, specifying the equipment to be installed at each borehole.

The Contractor must proceed with the immediate ordering and/or installation of the specified equipment after reception of these lists.

PB4.2 Prior to equipping of each borehole, the Contractor shall measure and record the diameter of the borehole at natural ground level, the static water level (in metres below ground level), the depth of the casing and the total depth (in metres below ground level). These measurements shall be verified with the Engineer prior to equipping of such borehole.

PB5. HAND PUMPS

Note: Supply and delivery of equipment required for hand pumps installation: Term contract rates are applicable.

Boreholes to be equipped with hand pumps shall be equipped with vertical helical rotor or piston positive displacement type hand pumps (or similar approved in writing).

All in accordance with specification, see Drawing No. 125 814/97 ME.

PB6. WINDMILLS AND WINDMILL EQUIPMENT

PB6.1 Windmills

Note: Supply and delivery of equipment for windmills installation: Term contract rates are applicable.

Note 1: All components of windmills shall be assembled and erected to the Manufacturer's details and requirements and to the satisfaction of the Engineer. The Contractor shall at all times have at his disposal one neat complete set of erection instruction manuals at the erection site.

Note 2: The contractor must certify that all the parts are genuine agent parts.

Note 3: Commissioning forms must be attached to all invoices.

All windmills shall be completely covered by the Manufacturer's guarantee of not less than twelve months as dated from the date of commissioning the particular plant.

PB6.2 Base Plates

The Contractor shall supply over each borehole one set of cast iron clamps and base plate of a size conforming to the diameter of the borehole rising main, complete with four 250 mm long by 12 mm dia foundation bolts and nuts. The foundation bolts are to be embedded into a Class 15/20 mix concrete footing of 600 mm minimum depth and 600 mm square surface dimensions. The bolts shall be located thus, that each half of the clamp (provided with slotted holes) can be moved back and forward sufficiently when column pipes are being lowered or raised. The base plate halves shall be clamped together using two bolts.

PB6.3 Concrete Foundations

Foundations holes shall be excavated to the positions, depths and widths as recommended by the Manufacturers of the particular plant but shall however not have dimensions of less than 1,00 metre in depth and 1,00 m diameter at the bottom of the foundation hole.

Following completion of the excavation of the foundation holes a layer of about 150 mm thick concrete, class 15/20 mix shall be placed in the bottom of the holes ensuring that the concrete surface in the different holes are at the same level. four 600 mm long 20 mm diameter mild steel bars with 100 mm of both ends bent ninety degrees, shall be placed 150 mm from the circumference of the holes, into the concrete layer of each hole. After the concrete has set, the steel anchor posts of the tower shall be carefully placed and positioned into the holes and each hole shall be filled with another layer of 300 mm of concrete. Care shall be taken that the surface of the older concrete is clean before new concrete is placed. The concrete shall completely cover all foundation plates. By using circular shuttering of approximately 250 mm diameter, concrete shall then be poured around each tower post bringing the top of the concrete to ground level where it shall be neatly rounded off. Earth shall then be rammed around the concrete.

The Contractor shall ensure that the tower is perfectly level when erected and if applicable that the borehole is in the centre of the tower posts and with a plumb line or other means that the centre of the tower cap is directly above the borehole.

PB7. DIESEL DRIVEN ENGINES

Note: Supply and delivery of all components required for repair work and installations: Term contract rates are applicable.

Note 1: The Contractor must certify that all the parts replaced are genuine agent parts.

Note 2: Commissioning forms must be attached to all invoices.

Note 3: No overhaul will be carried out without written approval of a written quotation approved by the Director: Water Services.

Note 4: Guarantee period --- three months from commissioning date.

Note 5: Service: Sticker indicating contractors name and service date as well as the next three monthly service date.

Note 6: Repair: Sticker indicating contractors name and repair date.

Note 7: Overhaul: Sticker indicating contractors name and overhaul date and the expiry date of guarantee.

PB8. BOREHOLE PUMPS

Note: Supply and delivery of all components required: Term Contract rates are applicable for borehole pump installation components.

- (a) Pumps shall be of the type specified and be self-priming, positive displacement rotary type, vertical spindle borehole pump, suitable for pumping potable water to a concrete reservoir or elevated tanks.

(b) Borehole column specifications

- (i) Columns with a dia less than 55 mm must be manufactured from medium galvanised tubing according to SABS 62 spec.
 - (ii) Columns with a dia more than 65 mm must be manufactured from heavy wall tubing with a 4,85 mm min wall thickness according to SABS 62 spec.
 - (iii) Bell-mouth columns are not acceptable.
 - (iv) Columns must include sockets, shafts, bobbin bearings, etc.
 - (v) A sufficient quantity of lubricant, as prescribed by manufacturer, shall be included.
 - (vi) All threads shall be parallel truncated.
 - (vii) Sockets shall be precision machined from seamless heavy wall tube.
 - (viii) Standard galvanised sockets for sizes above 25 mm dia are not acceptable.
 - (ix) Stag sealer to be used on column threads.
- (i) Column shall be according to specification, see Drawing No. 125 813/97 ME. Column stabilisers shall be fitted to at least every fourth column pipe to secure a neat fit against the borehole perimeter. During assembly of pipe columns, the pipe thread area and each socket shall be covered with a protective sealer, following securing of the socketed joint. All accordance to specification (stag).
- (ii) The inlet of the pump unit shall be fitted with a suitable strainer.
- (iii) The discharge head shall incorporate the pulley housing and shall be mechanically safeguarded against incorrect direction of rotation. The discharge head shall be provided with a cast iron or fabricated steel bed plate fixed to a concrete foundation block of adequate size by means of suitable anchor bolts. Pump and electrical/diesel driven shall be accurately aligned on an integral steel frame according to installation instructions of the pump manufacturer and shall allow adjustment in any direction on the horizontal plane for both engine and pump. Length of V-belts shall be as recommended by the pump manufacturer. A detachable steel plate guard, painted red, shall cover the entire V-belt drive. Provision to be made for adjustment of the guard to suit occasional V-belt tension adjustments. See Drawing No. 131 159/99 ME and 131 160/99 ME.
- (iv) **After installation, the contractor must check the horizontal alignment in both directions of the complete pump installation before starting and commissioning of the pump installations.**
- (v) Centrifugal clutches will be provided where pumps are driven by diesel engines.
- (vi) Name plates:
- Two name plates required:
- 10 mm punched letters.

To be installed as follows:

- * One nameplate inside the pump house.
- * One nameplate outside the pump house.
(Pump house door - outside position)

Information required on each nameplate:

BOREHOLE NO.	.....
DATE INSTALLED	.....
STATIC WATER LEVEL (m)	.....
DEPTH OF PUMP INLET (m)	.....
DEPTH OF BOREHOLE (m)	.....
PUMPING RATE (l/s)	.....
RECOMMENDED PUMPING TIME (h/day)	.....
TYPE AND PUMP NAME	.....
CONTRACTORS NAME	.....

PB9. SUBMERSIBLE CENTRIFUGAL PUMPS

PB9.1 Complete submersible pump price assemblies for various depths and heads shall comprise of:

Note: Detail of submission must be submitted by Bidder.

- (a) Pump and motor
Non-return valve must be installed at the discharge of the pump.
- (b) Pipe and pump coupling
- (c) HDPE pipe
- (d) Pipe and base plate coupling
- (e) Base plate
- (f) Term joint kit (electrical connection)
- (g) Starter and control panel
Motor protection should be sufficient to open the circuit within 10 seconds of the occurrence of locked rotor or single phasing or dry running.
- (h) Mef bend - galvanised
- (i) Barrel nipple - galvanised
- (j) Brass gate valve
- (k) Brass check valve
- (l) Valve and pipe coupling
- (m) 20 NB HDPE Type IV Class 6 for water level measurement strapped to columns with heavy duty cable ties (refer to Drawing No. 125 813/97 ME).
- (n) Submersible cable
The cable sizes must be based on the distance between the supply entry point (starter and control panel) and the motor.
- (o) Earth cable
Size of earth cable must be larger than the drop nylon rope and must be connected to the MOV surge arrestors.
- (p) Nylon rope

- (q) Nameplate
The borehole nameplate must be installed and support with a suitable bracket (see Drawing No. 125 813/97 ME).
- (r) Installation
The borehole pumps must not be installed deeper than 5 metre from the bottom of the borehole or sediment area.

PB9.2 Refer to PB12 and PD1-PD7 for electrical specifications and requirements.

PB9.3 Submersible centrifugal pumps shall be suitable for either 220 volt or three phase 380 volts.

PB10. ANCILLARY PIPEWORK

Ancillary pipe work to be supplied and installed according to specification. See Drawing No. 125 813/97 ME. Term contract rates are applicable.

PB11. EQUIPMENT

Equipment to be supplied and installed all in accordance with the applicable specification (refer to the list of the specification drawings) Term contract rates are applicable.

PB12 EQUIPPING OF BOREHOLES AND SMALL ELECTRICAL INSTALLATIONS

PB12.1 STANDARDS

Unless otherwise specified all materials must comply with SABS specifications.

Where no applicable SABS Specification exists all materials must comply with the equivalent DIN, IEC, IP or BSS specifications or be of the quality as specified.

The general applicable standards specifications for work carried out in accordance with this specification shall be:

SABS 150	:	PVC-insulated cables.
SABS 152	:	Triple-pole on-load isolators.
SABS 156	:	Magnetic circuit breakers.
SABS 177	:	HV Insulators(Class B)
SABS 178	:	HV Non-Current Carrying Accessories
SABS 182	:	Conductors for Overhead Electrical Transmission Lines
SABS 221	:	Steel cross-arms
SABS 555	:	Transformer oil
SABS 763	:	Hot-dip Galvanising
SABS 767	:	Earth Leakage Relays.
SABS 780	:	Transformers
SABS 784, 1195	:	Solid drawn high conductivity copper.
SABS 808	:	Glands for PVC-insulated cables.
SABS 890, 891	:	Ballasts for tubular fluorescent lamp luminaries.

SABS 1041	:	Fluorescent lamps.
SABS 1119	:	Tubular fluorescent lamp luminaries.
SABS 1180	:	Flush mounted distribution boards.
SABS 1250	:	Capacitors for tubular fluorescent lamp luminaries.
BS 89	:	Indicating instruments.
BS 3938		
IEC 185	:	Current transformers.
IEC 51	:	Running hour meters.
IEC 99-1	:	Surge Arrestors

The standard drawings of the Department which are issued together with this specification are :

131 860ME/99 sheet 1 of 7	-	General Arrangement of Borehole Starter Panel
131 861ME/99 sheet 2 of 7	-	Power Diagram of DOL Borehole Starter
131 862ME/99 sheet 3 of 7	-	Control Diagram of DOL Borehole Starter Level Control and Pressure Switch Control
131 863ME/99 sheet 4 of 7	-	Control Diagram of DOL Borehole Starter Level Control and Pressure Switch Control
131 864ME/99 sheet 5 of 7	-	Power Diagram of Star-Delta Borehole Starter
131 865ME/99 sheet 6 of 7	-	Control Diagram for Star-Delta Borehole Starter Level Control and Pressure Switch Control
131 866ME/99 sheet 7 of 7	-	Control Diagram for Star-Delta Borehole Starter Pressure Control and Flow Switch Control

These drawings contain the typical standard layout and principle of controls required by the Department.

Bidder's shall, however, prepare their own GA and diagrammatic drawings which shall contain all numbering and types of equipment to be used by them when a Bid is prepared for the Department.

Also refer to the section on the submission of drawings further in this specification.

PB12.2 EARTHING AND LIGHTNING PROTECTION

This section covers the lightning protection and earthing of electrical installations in buildings, open structures or in "stand alone" installation such as borehole control panels or distribution- or control gear pillars or kiosks. The earthing of all electrical installation shall be in complete accordance with SABS 0142 and the Machinery and Occupational Safety Act 85 of 1993.

The earthing described further herein is mainly applicable to the general earth systems of the pump stations, reservoirs, purification works and other water treatment plants.

PB12.2.1 General

It is a specific requirement of this contract specification that all electrical installation maintained under this contract be properly earthed. This requires that the earthing shall be tested and where earthing is found incomplete or earth values found outside the acceptable limits, this be repaired or improved and that the earthing system(s) again be tested and the values submitted together with the regular site report.

PB12.2.2 General Recommendations Of The Practical Installation Of Earth Electrodes

This section describes the requirements of the practical earthing of installations and the materials, which shall normally be used to obtain proper earthing.

Earth systems employed at the various installations which are maintained under this contract may vary in type and scope from the recommendations of this specifications and this specification must thus be used as a guideline to enable maintenance personnel to install or repair an earth system for compliance with the standard requirements and earth values as mentioned further herein.

PB12.2.3 Requirements Of An Effective Earth

An effective earth must prevent dangerous over-voltages arising between metallic structures, frames, supports or enclosures of electrical equipment and the ground during fault conditions.

An effective earth must be able to permit fault currents of sufficient magnitude to flow so as to operate protective devices to isolate the fault before damage can occur.

The ohmic resistance of an effective earth must be low enough to ensure that the step potential on the ground in the vicinity of the earthing point is within safe limits under fault conditions i.e. a voltage gradient not exceeding 40 V/m fault duration's exceeding 1 sec.

PB12.2.4 Types Of Earth Electrodes

Three types of earth electrodes are suitable:

(a) Trench Earths

Trench earths shall comprise a bare copper conductor laid at a minimum of 500 mm below ground level, usually when underground cables are installed. This type of earth electrode provides a relatively large contact area between electrode and surrounding ground, makes contact with a variety of types of soil and soils of varying moisture content en route and is economical to install.

(b) Spike Earths

Spike earths comprise rods of bare copper, copper-coated steel, stainless steel or galvanised steel designed for the purpose of penetrating ground to depths of up to several metres.

A low resistance earth may sometimes be obtained by driving multiple spikes at some distance from each other in order to provide parallel paths.

In hard or rocky ground, it is usually necessary to drill holes into which earth spikes are inserted and then packed with soft soil.

(c) Foundation Earths

Foundation earths comprise bare copper or galvanized iron conductors laid under the foundations of buildings, miniature substations, distribution pillars, bases of wooden, concrete or steel poles and structures. Because soil under foundations usually retains moisture, foundation earths are located to take advantage of this favourable condition. Furthermore, they are economical to install.

PB12.2.5 Materials For Earth Electrodes

Bare copper, either in stranded, strip or rod form, is considered the most suitable general purpose material for earth electrodes. Its main disadvantage is its cost and susceptibility to theft.

Bare galvanized iron and steel, either in stranded, strip or rod form, has a satisfactory record of survival in non-aggressive soils and is more economical than copper.

Bare aluminium is unsuitable as electrode material.

Earthing electrodes used for earth systems shall preferably be solid steel with bonded copper protection.

The nominal diameter of earthing electrodes shall not be less than 16 mm unless the electrodes are specified for placing in pre-drilled holes in which event a minimum nominal diameter shall not be less than 12 mm.

Each earth electrode shall be provided complete with an earth electrode coupling supplied by the earth electrode supplier. The coupling shall be suitable to accommodate the earth wire specified, as well as the type and size of earth electrode used.

Earth electrodes designed for coupling by means of external sleeves shall be provided with an adequate quantity of hydro-carbon or silicone grease to be applied to the coupling before the joint is made.

Earth electrodes designed for coupling by means of internal pins or splines shall be provided with thin walled tubes and hydro-carbon or silicone grease to seal the joints.

The material of the clamps shall be electrolytically compatible with the electrodes and the conductor materials.

An adequate number of driving caps or bolts shall be supplied with the electrodes to protect the ends of the earthing electrodes whilst been driven into hard soil.

PB12.2.6 Corrosion

Because galvanized ferrous metals corrode sacrificially to copper, galvanized iron and steel electrodes should not be buried in close proximity to bare copper.

PB12.2.7 Technical Requirements Of Neutral Earthing of Distribution System (Multiple Earthed Neutral (MEN) and Protective Multiple Earthing (PME) systems)

NOTE : The following relevant aspects have been extracted from the "AMEU CODE OF PRACTICE FOR THE APPLICATION OF NEUTRAL EARTHING ON LOW VOLTAGE DISTRIBUTION SYSTEMS"

Distribution equipment associated with transformer substations that are either ground mounted or pole mounted and fed by underground cable or overhead line, with or without an earth continuity conductor, (ECC), should be installed, connected and earthed in accordance with the following requirements:

- (i) Where the resistance to earth of the HV equipment earth is 1 ohm or less, it is permissible to earth the LV neutral to the HV earth electrode.
- (ii) Where the HV equipment earth exceeds 1 ohm the LV neutral shall be earthed at a minimum distance of 6 m from the HV equipment earth (i.e. 6 m from the HV electrode/s and also from any earthed metalwork connected thereto).
- (iii) Notwithstanding the requirements of (i) above, where transformers are associated with HV overhead lines, it is considered good practice to separate the HV and LV earth electrodes. The minimum earth separation should be 6 m or 1 LV span.
- (iv) The overall resistance to earth of the neutral of an LV distributor or distribution system must not exceed 10 ohms.
- (v) The LV neutral may be connected to other supply neutrals, earth electrodes, cable sheaths and armouring and these connections used to obtain the required earthing value of 10 ohms or less specified in par. (iv) above.
- (vi) The neutral of underground and overhead LV distributors must be earthed at the remote ends of each distributor.
- (vii) Where the overall resistance to earth of the neutral of the distribution system exceeds 10 ohms, the neutral shall be earthed at intermediate positions on the distributor/s to reduce its resistance to earth to below this limit.
- (viii) The cross-sectional area of the neutral of all LV distributors must not be less than that of a phase conductor.
- (ix) No circuit breakers, isolators, fuses, switches or removable links shall be installed in the neutral between the transformer star point and the remote end of any LV distributor or service connection.

- (x) All metallic sheathing and armouring of cables and all metalwork associated with meter cabinets, fuse pillars, etc., supporting or enclosing LV cables shall be bonded to the distributor neutral conductor.
- (xi) Where a Separate Neutral Earth (SNE) cable is part of an MEN or PME system, the armouring and/or metallic sheath and any ECC shall be bonded to the neutral at the supply end of the cable.
- (xii) To ensure the integrity of the neutral, it is recommended that all connections and joints on or to overhead line conductors be made by compression fittings or, alternatively double bolted connectors.
- (xiii) MEN or PME may be applied to any single LV distributor without alterations to other LV distributors supplied from the same transformer.

PB12.2.8 Substation Earthing

In order to comply with the requirements of the previous paragraphs, an earth resistivity measurement shall be undertaken at the site of a substation or miniature substation, preferably by a specialist firm.

The Contractor may undertake this measurement himself but in compliance with SABS 0142 by using the nul-balance megger method and employing test electrodes. The earth resistance measurement in this case shall preferably be 5 Ω , referred to zero.

The Contractor shall then submit to the Department or Engineer the details of a proposed substation earth indicating whether a trench earth, spike earth or foundation earth is intended and the proposed inter-connections with the installation.

PB12.2.9 Fence Earth System Of Outdoor Substations

In cases where substations contain transformers or switchgear installed outdoors, the fence enclosure shall be earthed as follows:

A 70 mm² earth wire shall be installed 600 mm below ground level and 500 - 1000 mm from the fence on the outside of the substation along the entire length of the fence. This earth loop shall be lugged and earthed at each corner pole of the wire mesh enclosure. The earth resistance of this installation shall preferably be < 20 Ω , referred to zero.

If a 20 Ω resistance cannot be obtained, then 1,8 m earth rods shall be installed at each corner post of the fence enclosure and bonded to the pole by means of a 70 mm² earth wire tail.

Such a fence earth system shall also be bonded to the main meter box earth point or 400 V switchgear earth bar of the substation (if available) by means of lugged 70 mm² earth wire.

This earth system shall further be earthed to the tank earth point of the transformer and the tank earth point shall be earthed to the neutral (star point) of the transformer, all by means of 70 mm² earth wire.

If the earth system of the MV lightning arrestors are within 9 m of the fence earth system, the MV lightning arrestor earth shall also be bonded to the fence earth system. This connection shall only be carried out if ESKOM or the Supply Authority allows the Contractor to carry out this work.

PB12.2.10 Trench Earth System

This section shall be applicable where pole mounted transformers and ESKOM meter boxes supply the power to a site.

Two separate 1,8 m earth electrode shall placed at least 9 m apart and at 600 mm below ground level in the cable trench for the LV cables leading away from the transformer or meter to the main board or motor control centre of the installation.

These earth electrode shall be connected together with 70 mm² bare copper earth wire by means of clamping the earth wire to the earth electrode with standard earth electrode clamps and the earth wire shall further be laid in the trench together with the main cables to the main board or motor control centre of the installation.

The earth electrode nearest to the ESKOM supply point shall be connected to the earth point in the ESKOM meter box.

All earth conductor ends connected to earth bars in meter boxes or boards shall be lugged.

In the case where a fenced enclosure is used for a ground mounted transformer, the trench earth conductor must be connected to one of the earth points at a corner post or the earth point on the tank of the transformer.

Any trench earth system earth resistance shall preferably be 5 Ω , referred to zero

PB12.2.11 MV equipment earth.(where applicable)

Any MV switchgear earths shall be bonded to the fence earth system or the trench earth system if such MV earth system is within 9 m of the fence earth system or the trench earth system.

Any support steelwork for MV equipment or the transformer support steelwork shall be bonded to the fence earth system or the trench earth system with 70 mm² bare copper earth wire.

This connection shall only be carried out if ESKOM or the Supply Authority allows the Contractor to carry out this work.

PB12.2.12 Substation Building Earths

In the case of a substation building which contains MV switchgear and/or transformers, the following section shall apply.

A main earth mat shall be placed 700 mm. below ground level in a position outside the substation building in a position as instructed on site.

The earth mat shall consist of 5 earth rods driven into the bottom of ground trenches with 4 rods placed in a 2 m x 2m square pattern with the fifth rod at the centre thereof.

The 4 outer rods shall be connected to the centre rod by means of 70 mm² bare copper earth wire.

A 70 mm² bare copper earth wire shall be connected to the centre rod and shall terminate on a main earth bar in the main LV switchboard.

A 70 mm² bare copper earth wire shall further be connected to the transformer tank and LV star bushing.(neutral bushing) of the transformer and to the MV switchgear earth point or bar and shall be terminated on the earth bar of the main board.

PB12.2.13 Earthing of General Electrical Installations**PB12.2.13.1 General**

All earth conductors shall be stranded copper with or without green PVC insulation. Trench earths shall preferably be bare copper earths.

All earth conductor sizes shall be determined in accordance with SABS 0142, where the earth does not form an integral part of the cable.

PB12.2.13.2 Switchboards

A separate earth connection shall be supplied between the earth busbar of the main switchboard and the earth busbar of every sub-switchboard. These connections shall consist of bare or insulated stranded copper conductors installed along the same routes as the supply cables or in the same conduit as the supply conductors. Alternatively armoured cables with earth continuity conductors included in the armouring may be utilised.

PB12.2.13.3 Sub-Circuits

The earth conductors of all sub-circuits shall be connected to the earth busbar in the supply switchboard in accordance with SABS 0142.

PB12.2.13.4 Ring Mains

Common earth conductors may be used where various circuits are installed in the same wiring channel in accordance with SABS 0142.

Earth conductors for individual circuits branching from the ring main shall be connected to the common earth conductor with T-ferrules or be soldered. The common earth shall not be broken.

PB12.2.13.5 Connections

Under no circumstances shall connection points, bolts, screws, etc., used for earthing be utilized for any other purpose. It will be the responsibility of the Contractor to supply and fit earth terminals or clamps on equipment and materials that must be earthed where these are not provided. Unless earth conductors are connected to proper terminals, the ends shall be tinned and lugged. Lugs may be crimped, using mechanical or pneumatic tools designed for this purpose, on condition that evidence is submitted that the method used complies with the performance requirements of BS 4579, Part 1: "COMPRESSION JOINTS IN COPPER".

PB12.2.13.6 Non-Metallic Conduit

Where non-metallic conduit is specified or allowed, stranded copper earth conductors shall be installed in the conduits and fixed securely to all metal appliances and equipment, including switch boxes, socket-outlet boxes, draw-boxes, switchboards, luminaries, etc. The securing of earth conductors by means of self-threading screws are not permitted.

PB12.2.13.7 Flexible Conduit

An earth conductor shall be installed in all non-metallic flexible conduit. This earth conductor shall not be installed external to the flexible conduit but within the conduit with the other conductors. The earth conductor shall be connected to the earth terminals at both ends of the circuit.

PB12.2.13.8 Water Pipes

Metal domestic cold water mains shall be bonded to the earth busbar in the main switchboard by solid 15 x 2 mm copper strapping. All other domestic metal water pipes shall be connected by 12 x 0,8 mm perforated or solid copper strapping (not conductors) to the nearest switchboard. The strapping shall be fixed to the pipe work by brass nuts and bolts and against walls by brass screws at 150 mm centres.

In all cases where metal water pipes, down pipes, flues, etc., are positioned within 1,6 m of switchboards, an earth connection consisting of copper strapping shall be installed between the pipe work and the board. In vertical building ducts accommodating both metal water pipes and electrical cables, all the pipes shall be earthed at each switchboard.

PB12.2.13.9 Roofs

Where service connections consist of overhead conductors, all metal parts of roofs, gutters and down pipes shall be earthed. One bare 10 mm² copper conductor shall be installed over the full length of the ceiling void, fixed to the top purlin and connected to the main earth conductor of each switchboard.

The roof and gutters shall be connected at 15 m intervals to this conductor by means of 12 x 0,8 mm copper strapping (not conductors) and galvanized bolts and nuts. Self-tapping screws are not acceptable. Where service connections consist of underground supplies, the above requirements are not applicable.

PB12.2.13.10 Pump Station Buildings, Roof Earths and Reservoirs

A ring earth consisting of a 70 mm² bare copper earth wire shall be installed all around the perimeter of each pump station or building on site at 600 mm below ground level and 1m from the building structure.

The building roofs and steel columns (where applicable) shall be bonded to this ring earth in two places at diagonal corners of the building.

The roof earth connections shall be housed in 25 mm Ø hot dipped galvanised conduit with the conduit saddled to the walls of the buildings by means of hot dipped galvanised conduit spacer saddles. The conduits shall reach from below the roof overhang to 300 mm below ground level.

This earth system shall also be bonded to the earth bar of the main switchboard or motor control centre.

In the case of a concrete roof of a building or a reservoir with a concrete roof which is not protected against lightning, the Contractor shall first enquire whether the Department requires such a structure to be protected.

Some reservoirs and buildings are already fitted with foundation earths and will not require additional earthing.

In the case where a structure must be protected against lightning, the Contractor shall submit a report (preferably by an earthing specialist firm)to the Department in terms of SABS 03/1985 (as amended), of the type of system required and the cost thereof.

PB12.13.11 Corrosion Protection.

Steel pipelines employing corrosion protection systems, must not be earthed, but the Department must be informed of such systems and advice must be obtained from corrosion protection specialists before any earthing of such pipelines are attempted.

PB12.3 INSTALLATION AND TESTING OF ELECTRICAL EQUIPMENT**PB12.3.1 DISTRIBUTION BOARDS AND MOTOR CONTROL CENTRES.****PB12.3.1 General Construction****PB12.3.1 Size**

All switchboards shall be of ample size to accommodate the specified switchgear and provide space for future switchgear. For every 4 (or part of 4) 5 kA circuit breakers on a switchboard, space for an additional 5 kA circuit breaker shall be allowed for unless future space requirements are clearly specified. For circuit breakers above 5 kA, this factor shall be 15%.

PB12.3.2 External Dimensions

The maximum allowable height of free-standing switchboards is 2,2 m. Cubicle type boards may be up to 2,4 m high if they can be fully dismantled into individual cubicles. Where, due to space restrictions, a board exceeds 2,2 m in height, equipment not normally requiring access, shall be installed in the top section, enabling equipment normally requiring access to be installed lower down in the board.

All other specified external dimensions for switchboards shall be strictly adhered to. If the proper clearances cannot be adhered to as a result of restricting external dimensions, the Contractor shall obtain the approval of the Engineer before manufacturing the switchboards.

PB12.3.3 Moisture And Vermin

All switchboards shall be rendered moisture proof and vermin proof and shall be adequately ventilated.

PB12.3.4 Load Balance

The load shall be balanced as equally as possible across multiphase supplies.

PB12.3.5 General Work

NOTE: Care must be taken when using megger test equipment on electrical installations due to damage which can result to MOV type lightning arrestors, electronic motor protection units and electronic instrumentation .

The following work shall be carried out on electrical installations whenever any work is carried out on any site.

- (a) The earthing of the whole installation shall be tested and checked in accordance with the requirements of the Section PB12.2 of this specification.
- (b) Clean inside and outside of all distribution boards and control panels. Note severe rust problems and report to the Department.

- (c) All wiring connections to terminals in boards, joint boxes, lock-stop button boxes, stop-start remote station boxes, instrument casings and in motor cable boxes shall be tightened.

Overheating damage to conductor ends and terminals or switchgear due to loose connections shall be repaired as set out further herein.

- (d) All light circuits shall be checked for operation and lamps shall be replaced as necessary.
- (e) All plug circuits shall be checked for correct polarity and for earthing problems. Damaged 16A 3 pin switch-plugs shall be replaced as necessary.
- (f) All earth leakage units shall be checked with an earth leakage tester. Where a 1000 mA earth leakage unit is used in conjunction with a shunt trip main incoming circuit breaker, the manufacturers specification for testing of the unit shall be followed.
- (g) Any over/under voltage or phase failure/phase rotation protection monitor relays shall be tested for proper operation.
- (h) Check all voltmeters, voltmeter switches and ammeters for correct operation and log all maximum demand currents before resetting ammeters.
- (i) Log all motor running hour meters.
- (j) Check all recorded data(if available) on electronic motor protection units. Time lapse since last trips and cause of trips must be logged.
- (k) Check all instrumentation fuses and all control circuit supply fuses and circuit breakers.
- (l) Test all indication lamps and replace blown lamps as necessary.
- (m) All board doors and covers shall be checked for proper closing.

All open connections such as found in broken or missing light switches, plugs and lights shall be closed off with cover plates or replaced, as the case may be.

No live open connections or live metalwork on any appliance or board shall be left in that state by the Contractor.

- (n) All surge arrestors and lightning protection equipment shall be inspected for damage or burn-out. Damaged units shall be replaced. Carbon granule type of arrestors (for power) must be replaced with MOV arrestors with a fault rating of not less than 40 kA.

Instrumentation surge arrestors must be replaced with the correct type as prescribed by the supplier of the instrument, for digital signals and current loops.

PB12.3.6 Starter- and Distribution Boards (such as used for boreholes and small plants)

Boards shall be constructed and maintained as follows, over and above the work specified in PB.5 above:

(a) Circuit Breakers or Main Switches

Circuit breakers shall comply with SANS 156.

Contacts of circuit breakers shall be silver alloy and shall close with a high pressure wiping action.

Where specified, the circuit breaker shall be capable of accommodating factory fitted shunt trip or auxiliary contact units or similar equipment.

The operating handle shall provide clear indication of "ON", "OFF" and "TRIP" positions.

The mechanism shall be of the TRIP-FREE type preventing the unit from being held in the ON position under overload conditions.

All moulded-case circuit breakers in a particular installation shall as far as is practical be supplied by a single manufacturer.

The incoming terminals of single-pole miniature circuit breakers shall be suitable for connection to a common busbar.

The circuit breaker shall have a rating plate indicating the current rating, voltage rating and breaking capacity.

Extension type operating handles shall be provided for units which are placed inside a board and shall be mounted on a chassis on the back plate of the board so that the operating shaft is as short as possible.

Extension shafts shall engage easily with the door handle cavity. The handle shall have a mechanical interlock so that the face panel or front door of the panel cannot be opened whilst the breaker is ON.

Isolators used as main switches for boards shall comply in principle with requirements of the previous paragraphs of 3.1.2 (a) above.

Isolators shall be of the triple-pole, hand operated type complying with SABS 152.

Isolators shall have a high speed closing and opening feature.

Isolators shall be suitably rated for the continuous carrying, making and breaking of the rated current specified as well as the through-fault current capacity as specified.

To distinguish the switches from circuit-breakers the operating handles shall have a distinctive colour and/or the switch shall be clearly and indelibly labelled "ISOLATOR".

When checking for proper operation the main switch or circuit breaker must be switched ON and OFF and voltage measurements taken on the outgoing side in both cases to check that all three poles switch properly and that the supply to the switchgear is OFF when the main switch or circuit breaker is switched OFF.

(b) Contactors

Contactors shall be of the open or totally enclosed, triple- or double pole, electromechanically operated, air-break type suitable for 380/433 V or 220/250 V supplies and shall comply with SABS 1092.

Contactors shall have the following characteristics :

- (1) Enclosed coil easily replaceable.
- (2) A permanent air gap in the magnetic circuit to prevent sticky operation.
- (3) Provision for quick and simple inspection of contacts.
- (4) Clearly marked main and auxiliary terminals.

All parts shall be accessible from the front.

In addition to the required current carrying capacity and switching duty of a contactor, the contactor chosen for a particular application shall be rated for the maximum through fault current allowed by the back-up protection devices at the point where the contactor is installed. Careful co-ordination of the short circuit devices shall take place.

All laminations of the magnetic system of the contactor shall be tightly clamped. Noisy contactors will not be accepted.

Non-current-carrying metallic parts shall be solidly interconnected and a common screwed terminal shall be provided. The contactor shall be earthed to the switchboard earth bar.

Latched contactors shall be provided with a trip coil and a closing coil. The contactor shall remain closed after de-energizing the closing coil and shall only trip on energizing the trip coil.

Contactor operating coils shall have a voltage rating as required by the control circuitry and shall have limits of operation and temperature rise as specified in clause 7.5 and Table IV of IEC 158-1. Latched contactors shall be capable of being tripped at 50 % of the rated coil voltage.

Contactors with provision to add auxiliary contacts on site are preferred. Contactors with permanently fixed auxiliary contacts shall have at least 1 x N/O and 1 x N/C spare auxiliary contacts in addition to the contacts specified for control purposes and in addition to the contacts required for self-holding operations or economy resistances. Where the number of auxiliary contacts required is greater than the number of contacts that can be accommodated on the contactor, an auxiliary relay or additional contactor shall be provided to supply the additional contacts.

It shall be possible to replace main contacts without disconnecting wiring.

Auxiliary contacts shall be capable of making, carrying continuously and breaking 6 A at 220 V AC, unity power factor for contactors used on 380-433/220-250 V systems.

Auxiliary contact functions required e.g. "lazy" contacts, late-make, late-break, make-before-break, etc. shall be inherent in the contact design. Under no circumstances may these functions be improvised by bending contacts, loading contacts, etc. These functions shall be available in all contactors.

Spare auxiliary contacts shall be wired to numbered terminal strips in the switchboard and shall appear on the switchboard drawings.

All contactors on a specific project shall be from a standard range of one single manufacturer, unless specified to the contrary.

Contactor(s) which are tested for proper operation must be operated to ensure that the coil of the unit is in order and voltage measurements taken on the outgoing side to check that all three sets of contacts make evenly.

Contactors shall not emit a humming noise when pulled in and contactors shall further be checked for sticky moving parts.

Auxiliary contacts of contactors shall be inspected likewise.

Faulty contactor coils shall be replaced and badly worn or burned contacts sets must be replaced as a set.

Contactors which cannot be maintained must be replaced with an equivalent unit, if faulty, and maintainable units must preferably be used in that case.

Malfunctioning auxiliary contact blocks of contactors must be replaced.

If the same manufacture and model of maintainable contactor or parts thereof cannot be obtained, the whole unit must be replaced with an equivalent unit.

Contactor ratings shall be determined by using one size larger than the correct AC3 rating which would normally be used.

Star contactor must be of the same rating as main or delta contactors, in the case of star-delta starters.

(c) Connections to busbars

Conductor ends shall be fitted with crimped or solid sweated lugs which are bolted to the busbar.

Busbar clamps with bolted connections are acceptable for smaller circuit conductors.

Where lugs are crimped evidence shall be submitted that the crimping technique used will comply with the performance requirements of BS 4579, Part 1: "COMPRESSION JOINTS IN COPPER".

(d) Busbars

Busbars in panels where the main switch or circuit breaker exceeds 150A, shall be manufactured of solid drawn high conductivity copper with rectangular cross-section in accordance with SABS 1195 and BS 159 and BS 1433, where applicable.

Busbars in boards where the main switch or circuit breaker is less than 150A may be done in the form of flexible welding cable, installed in PVC trunking along with small bore wiring.

Although SABS 784 refers to overhead and rising busbars, busbars in miniature substations shall comply with applicable sections of this specification, especially as far as insulation and clearance values, creepage distance, joints, insulation resistance, dielectric strength, deflection test, absorption resistance and rated short time withstand current are concerned.

Busbars shall be supplied for the following applications:

- (1) Distribution of supply voltage.
- (2) Connection of equipment with ratings exceeding the current rating of 70 mm² conductors.
- (3) Connection of outgoing circuits with current ratings in excess of that followed for 70 mm² conductors
- (4) Collector bars for parallel cables.
- (5) Connection bars for neutral conductors .
- (6) Earth busbars .
- (7) Connections to miniature circuit breakers.

All busbars shall be covered with coloured heat-shrinkable or air dying shrinkable.

The colour shall correspond to the colour of the supply phase.

Busbars shall be radius-edged where they change direction.

Neutral conductors for circuits protected by a single-pole circuit breaker or fuse-switch shall be connected to a neutral busbar mounted in a suitable position.

A separate neutral bar shall be provided for each earth leakage unit provided.

Neutral bars shall have a cross-section of at least 6,3 x 25 mm and shall be long enough for the lugs of all neutral conductors to be bolted separately to the busbar without overlapping the lugs.

(e) Wiring

Incoming and outgoing cables shall be terminated on the gland plate.

Cable tails with sizes up to 70 mm² may terminate on clamp type terminals where the clamping screws are not in direct contact with the conductor. All cables larger than 70 mm² shall terminate on busbar studs which are connected directly to the equipment. Parallel connected cables shall be connected to a collector busbar or busbar stub without crossing the conductors.

External wiring for low voltage, control, interlocking, alarm, measuring and D.C. Circuits shall terminate on numbered wiring terminals.

The correct terminal size as recommended by the manufacturer for each conductor to be connected shall be used throughout. The terminal numbers shall appear on the wiring diagrams of the switchboard.

Terminals for power wiring shall be separated from other terminals. Terminals for internal wiring shall not be interposed with terminals for external circuits. All connections to terminals shall be identified with numbers.

Where switchboards consist of separate sections, the control wiring passing between sections shall be terminated on strips in each section so that control wiring can be readily re-instated when reassembling the board.

The current rating of conductors for the internal wiring shall be sufficient to carry the maximum continuous current than can occur in the circuit. This value shall be determined from the circuit breaker or fuse protection of the circuit. The smallest conductor size to be used for power wiring shall be 2,5 mm².

PVC wiring channels shall be used throughout and shall be installed horizontally and vertically. Under no circumstances may power and low voltage control circuit wiring be installed in the same wiring channel. Channels shall not be more than 40% full and shall preferably be of the finger type of channel.

Where neutral connections are looped between the terminals of instruments, it is essential that the two conductor ends be inserted into a common lug or ferrule and are crimped or soldered together in order that the neutral connection is not broken when the conductors are removed from one of the instruments.

Wiring should as far as possible be confined to the front portions of switchboards for ease of access. This requirement is important for wiring between smaller circuit breakers and the associated main circuit breaker as well as the wiring from circuit breakers to lighting and socket-outlet circuits.

Conductors connected to terminals shall be soldered or ferruled. Connections to circuit breakers, isolators or contractors shall be made by one of the following methods:

- (i) A ferrule or lug of the correct size,
- (ii) soldering the end of the conductor

All conductors terminating on meters, fuse holders and other equipment with screwed terminals shall be fitted with lugs. The lugs shall be soldered or crimped to the end of the conductor. The correct amount of insulation shall be stripped from the end to fit into the terminal. Strands may not be cut from the end of the conductor.

Neutral wires may not be cut where these are looped on control gear terminals, but the insulation must be removed and the wire looped and crimped or soldered into the lug.

The colour of the conductors for all 220/250 Volt circuits shall correspond to the colour of the supply phase for that circuit. Neutral conductors shall be black.

All other conductors in the board, supplying control circuits, etc., shall be coded in colours other than those specified above. A colour code shall be devised for each board and the colour code shall be shown on the wiring diagrams.

All conductors that terminate at wiring terminals and all conductors used for the internal wiring of the switchboard, shall further be identified at both ends by means of durable cable marking ferrules. PVC or other tape is not acceptable.

The numbers on the markers shall be shown on the wiring diagrams.

(f) Labelling

Care shall be taken to ensure that all equipment is fully labelled and that accurate descriptions and safety warning notices appear in English only. The Engineer must be approached by the Contractor to obtain the specific requirements for labels before the labels are manufactured.

Engraved plastic or ivory sandwiched strips shall be used throughout. The strips shall bear white lettering on a black background for normal labels and red letters on a white or yellow background for danger notices.

All other equipment including meters, instruments, indicator lights, switches, push buttons, circuit breakers, fuses, contactors, control relays, protection relays, etc., shall be identified. The function of the equipment and circuits shall be clearly indicated. The main switch shall be labelled as such and designated:

"SWITCH OFF IN CASE OF EMERGENCY"

Flush mounted equipment within doors or front panels shall be identified with labels fixed to the doors or front panels respectively.

The labels for equipment installed behind panels, shall be fixed to the chassis close to the equipment. If this equipment is positioned too close together to accommodate descriptive engraved labels, the equipment may be identified by a code or number on an engraved label which shall be fixed close to the equipment. The code number shall be identified on a legend card which shall be installed on the switchboard behind a plastic or other protective cover.

(g) Instruments

Instruments shall be suitably rated for the supply voltage and frequency to be applied, which shall be 400/230 Volt, 50 Hz unless specified to the contrary.

All the instruments used for a particular application or a specific project shall be from the range of a single reputable supplier and shall have the same face dimensions. The face dimensions shall be square and not less than 96 x 96 mm.

All instruments shall comply with BS 89 and/or IEC 51.

Instruments shall be screened against magnetic interference and shall have anti-static, impact-resistant glass or "MACROLON" faces.

Preference will be given to locally manufactured instruments.

Instruments shall be insulated to achieve a 2 kV insulation resistance to earth.

All instruments shall be splash-proof and dust-proof unless more stringent requirements are specified for hazardous locations.

Instruments shall be sufficiently resistant to vibration that may be encountered in the specific application.

For normal environmental and supply conditions, instruments shall be suitable for use inside the limits specified in Tables III and VI of IEC 51.

All instruments shall be capable of withstanding overloads of continuous or short duration in accordance with section 8.3 of IEC 51.

Instruments shall be provided with studs for rear connection. Shrouds shall be provided to prevent accidental contact where instruments are to be installed in hinged panels of switchboards.

(h) Voltmeters and Voltmeter Selector

Unless specified to the contrary, voltmeters shall be scaled from 0-250 Volt in the case of L.V applications.

Voltmeters shall be of the moving iron type with class 1,5 accuracy as specified in IEC 51.

A zero adjustment screw shall be provided.

Unless specified to the contrary, a single voltmeter and selector switch shall be provided. The voltmeter switch shall have an "OFF" and three metering positions to indicate readings between neutral and each of the three phases.

The markings shall be indicated clearly on the face plate of the selector switch and the handle position shall be accurate in relation to the markings on the face plate.

The selector switch shall be of the cam-actuated or wiping air-break type with two breaks per pole.

(i) Ammeters

Ammeters shall have a moving iron element to indicate instantaneous values.

Direct reading ammeters up to a maximum rating of 60 A may be used. Current transformer operated ammeters shall be 5 A full scale, calibrated to read actual primary circuit currents. The current transformer ratio shall be indicated on the faceplate.

A zero adjustment screw shall be provided.

Where combined maximum demand and indicating ammeters are specified, a bimetallic spiral element shall be provided in the same housing to indicate mean value over a 15-minute period.

The bi-metal element shall drive a residual pointer to indicate maximum mean current between resettings. This pointer shall operate on the main scale and shall be of a distinctive colour. The pointer shall be resettable from the face of the meter.

The bi-metal element shall be designed to compensate for limits of ambient temperature between -20°C and 70°C.

Full load or rated current shall be clearly indicated, preferably with a red line. Unless specified to the contrary, a 100% condensed overscale shall be provided for instantaneous reading instruments and no overscale for combined maximum demand ammeters.

The intrinsic error, expressed in terms of the fiducial value in accordance with IEC 51, shall be class 1,5 for the instantaneous readings and class 2,5 for the mean maxima.

Where saturation current transformers are required, these shall form an integral part of the meter. Separate saturation current transformers are unacceptable to the Engineer.

(j) Running Hour-Meters

Running hour-meters shall be of the electrically operated cyclometer type, suitable for flush mounting.

Numerals shall be clearly defined white on a black background.

The range of hour-meters shall be five digits, the fifth digit indicating one-tenth of an hour, i.e. from 0 to 9999,9 hours.

The accuracy class shall be class i in accordance with IEC 51 unless otherwise specified.

(k) Earth Leakage Relays

Earth leakage relays shall be single or three-phase units with a sensitivity of 20 mA, with associated circuit breaker or on-load switch for use on 220/250 Volt single phase or 380/433 Volt three-phase, 50 Hz, supplies.

The units shall be suitable for installation in switchboards in clip-in trays or bolted to the chassis.

The earth leakage relay shall function on the current balance principle and shall comply with SABS 767 as amended, and shall bear the SABS mark. Integral test facilities shall be incorporated in the unit.

Circuit breakers with trip coils used integrally with earth leakage units (two-pole for single-phase units and three-pole for three-phase units) shall comply with SABS 156.

On-load switches used integrally with earth leakage units (two-pole for single-phase units and three-pole for three-phase units) shall comply with SABS 152.

The fault current rating of the unit shall be 2,5 kA or 5 kA as required, when tested in accordance with SABS 156

(l) Current Transformers

Current transformers shall comply with the requirements of BS 3938 and IEC 185 with the exception of the required impulse test level as specified below.

(1) Ratings

Current transformers shall be suitable for the primary currents listed hereunder and their decimal multiples:

10, 12.5, 15, 20, 25, 30, 40, 50, 60 and 75.

The preferred values are:

10, 15, 20, 30, 50 and 75.

Current transformers shall have secondary ratings of 1, 2 and 5 A, with 5 A being preferred.

Current transformers shall have standard outputs of 2.5, 5, 10, 15 or 30 VA as applicable in terms of the burden of the instruments and interconnecting wiring. The current transformer output shall match the actual instrument burden as possible in order not to introduce unnecessary errors.

(2) Accuracy Class

For metering applications, accuracy classes of 0.1, 0.2, 0.5, 1, 3 or 5 are applicable. Where no accuracy class has been specified, the following table may be used as a guide:

Application	Primary Current	Suggested Class
Indicating Instruments	All	5
Metering Applications	Up to 200 A	1
Metering Applications	250 to 600 A	0.5
Metering Applications	800 A and above	0.2

Where ring type current transformers are specified, the aperture shall not be unnecessarily large as accuracy is thereby reduced.

The classes for protection are 5P, 10P, 15P, 20P or 30P with 5P and 10P being standard. Turns compensation shall not be employed on protection current transformers for ratios greater than 150/5.

Class X current transformers shall be used in differential protection systems.

Manufacturers shall supply the magnetization curve details and saturation factors for each different transformer ratio.

(3) Markings

All current transformers shall come complete with a label on which the following information is indelibly stamped:

Manufacturer.
Serial No. or Type.
Rated primary and secondary current.
Rated Frequency.
Rated output and accuracy class.
Highest system voltage.
Rated insulation level.

(4) Fault Current

Current transformers shall be capable of withstanding the dynamic forces resulting from the maximum through-fault current which may be encountered at the point where they are installed. The short time current rating of current transformers shall be as least equal to that of the associated circuit breaker.

(5) Impulse Level

Current transformers used in system voltages in excess of 660 Volt shall withstand an impulse test level of 95 kV. Impulse levels for current transformers used in system voltages up to 660 Volt shall comply with BS 3938.

(6) Tests of Current Transformers

One protection current transformer of each type used in a contract shall be tested to confirm the estimated characteristics. The following results shall be submitted:

- (a) Magnetization curve.
- (b) Secondary resistance.
- (c) Secondary leakage reactance, if not negligible or if required by the Engineer.

The power frequency, secondary to earth and over-voltage interturn test in accordance with BS 3938 shall be conducted on all current transformers. Impulse tests shall be conducted on all current transformers intended for use in system voltages in excess of 660 Volt.

(m) Tests of Boards

The Engineer shall be notified when the mechanical construction of the switchboard, i.e. frame, panels and base frame, is complete in order that it may be inspected at the factory.

Function tests of all equipment, control and interlocking circuits shall be conducted to the satisfaction of the Engineer. Testing equipment and facilities including instruments, dummy loads and additional switchgear and cables shall be provided by the Contractor at no extra cost. The Engineer shall be notified in writing two weeks in advance of any test to be conducted, to allow its representative to be present at such tests. A complete report on the tests shall be handed to the Engineer.

(n) Drawings for Approval

A set of three prints of the shop drawings for the switchboards shall be submitted to the Engineer for approval before the boards are manufactured. The following information shall be presented:

- (i) A complete wiring diagram of the equipment on the boards.
- (ii) A complete layout of the arrangement of the switchboards indicating all equipment dimensions and the construction of the boards. The positions and method of fixing and sizes of busbars shall be shown.
- (iii) All labelling information on a separate sheet.
- (iv) The make, catalogue number and capacity of all equipment such as isolators, circuit breakers, fuses, contactors, etc. on a separate sheet.

The approval of drawings shall not relieve the Contractor of his responsibility to supply the switchboards according to the requirements of Department.

(o) Final Drawings

Five complete sets of "as built" drawings of all switchboards shall be submitted to the Engineer within two weeks after delivery of the boards. The following basic information shall be presented:

- (1) Item (i) to (iv) of the previous paragraph.
- (2) Terminal strip numbers, numbers and colours of conductors connected to the terminal strips and numbers and colours of the conductors utilized for the internal wiring.
- (3) A separate schedule of all equipment with the name of the equipment, name of the manufacturer, type of equipment, model of equipment, address and telephone number of the supplier .

All further information and data shall also be submitted as specified further herein.

(o) Manuals

Five sets of manuals for all specified main and sub-main switchboards shall be supplied to the Engineer at no extra cost. These manuals shall include the following information:

- (1) Complete information on the operation of the equipment.
- (2) Complete information for maintenance of the equipment.
- (3) Brochures and ordering information
- (4) A complete equipment list indicating quantities and relevant catalogue numbers

PB12.4 ELECTRIC MOTORS

PB12.4.1 STANDARDS

Electric motors shall comply with SANS 0157, Part 1, as far as quality is concerned and the performance of motors shall comply with SANS 948, Part 1 (1978) and with IEC 34-1 and with BS4999 : Part 30, 31 and 32. Insulation of motors shall be Class "F" (B-rise) and shall comply with BS2757 (1955)

The dimensions of motors shall be in accordance with SANS 948, Part 1 (1978) and IEC 72-1, 72-2 and BS4999, Part 10.

Frames of motors shall comply with IP55 and cooling shall comply with ICO 141.

PB12.4.2 TYPES

The motors shall be 380 Volt, 3-phase, 6-terminal, 50 Hz, T.E.F.C. type, squirrel cage induction motors and suitable for DOL or star-delta starting. The method of starting of the different sizes of motors covered by this specification, is tabled further herein.

The transformers supplying power to the installations will normally be standard 400/231 V secondary voltage (SABS 780) type. The supply voltage at the terminals of the motors during start-up shall not be less than ± 385 Volt whilst the supply voltage shall not be less than ± 395 Volt at full-load current.

PB12.4.3 CONSTRUCTION

PB12.4.3.1 Frames and End shields

Motors shall have stator frames with deep external cooling ribs. The frames, feet and end shields shall be manufactured from cast iron. Alloy cast frames will only be accepted after written approval has been granted by the Engineer. Frames shall be machined to accept the stator core after which the registers shall be finish machined with particular regard to concentricity of the stator bore. All frames, end shields and terminal box fixing holes shall be jig drilled to ensure interchangeability of components.

Motors shall be foot mounted and will be used in a vertical position situation with the motor shaft at the top.

The underside of the frame (feet) shall also be machined to obtain correct centre height to and parallelism with the shaft axis.

PB12.4.3.2 Stator

The stator shall be built of electrical steel lamination having semi-closed slots. Thick end plates shall prevent spreading of the laminations and burrs shall be removed before winding takes place.

Windings shall consist of pre-formed coils of synthetic resin covered copper wire.

Slot liners shall consist of thick durable insulating material to give additional protection. The wound core shall be impregnated before being hydraulically pressed into the frame and shall thereafter be fixed into position.

PB12.4.3.3 Rotor and shaft

Motors shall have rotor windings of cast aluminium or copper bar as the case may be. End rings and wafer blades shall form an integral part of the casting procedure where this is employed. Rotors shall be dynamically balanced and shafts shall consist of 080M40 (EN8) steel.

PB12.4.3.4 Terminal Boxes and Terminals

Terminal boxes and lids shall be manufactured from cast iron or heavy duty cast alloy and terminal boxes shall be mounted on the right hand side of the motor, as seen from the shaft end.

Boxes for motors shall be suitable to accept 4-core PVC armoured cables as tabled further herein

Terminals shall be brass stud type in rigid insulated mountings and shall be suitable for the lugs of the cables and specification herein. Six winding end terminals, complete with removable brass straps for DOL or star-delta connections, and one earth terminal shall be provided in the box.

Each terminal shall be provided with three brass nuts and two brass washers per stud, as well as with the solid brass straps as specified. The terminals shall be suitably sized to accept the lugs of the cables specified further herein

IP55 seals shall be provided between the cable box frame and the motor and between the box lid and the cable box.

PB12.4.3.5 Bearings

Bearings shall be of the ball or roller type with shields and shall be enclosed in dust proof housings. Bearings shall be charged with BP Energrease LS3 upon assembly of the motor under dust and grit free conditions. Standard high quality bearings shall be used on motors.

PB12.4.3.6 Markings

All motors shall be supplied with a riveted on metal plate label on top of the motor on which the following information is engraved (not stamped) :

Manufacturer of Motor
 Serial number of motor
 Rated voltage of motor
 Full load current of motor (for delta operation)
 Output kW rating on shaft.
 Rotational speed in RPM.
 Continuous duty cycle
 Temperature insulation class
 SABS or IEC mark.
 All markings required further by BS 4999 and not already specified above.
 Other manufacturers' data as required

PB12.4.4 RATING

Motors complying with the following ratings used in a project must be connected with cables as shown in the following table.

Motors up to and including 7,5 kW shall be started DOL and motors from 11 kW to 22 kW shall be started Star-Delta.

The specific size of motor for a site shall be sized for a rating applicable to the project requirements.

MOTOR RATING	METHOD OF STARTING	CABLE TERMINAL BOX SUITABLE
5,5 kW	DOL	1 x 6 mm ² 4-core PVC cable
7,5 kW	DOL	1 x 6 mm ² 4-core PVC cable
11 kW	Star-Delta	2 x 10 mm ² 4-core PVC cable
15 kW	Star-Delta	2 x 10 mm ² 4-core PVC cable
18,5 kW	Star-Delta	2 x 16 mm ² 4-core PVC cable
22 kW	Star-Delta	2 x 16 mm ² 4-core PVC cable

PB12.5 CABLES

PB12.5.1 CONSTRUCTION

Cables shall be manufactured in accordance with SABS 150, shall come only from fresh stocks, and shall be constructed as follows:

- (a) Un-armoured cables : PVC-insulated/PVC-sheathed.
- (b) Armoured cables : PVC-insulated/PVC-bedded/armoured/black extruded PVC sheath.
- (c) Single core cables : PVC-insulated/unsheathed.

The conductors shall be of high conductivity annealed stranded copper and the cores may be shaped or circular.

The insulation shall be general purpose PVC, 600/1000 Volt Grade.

The bedding shall consist of a continuous impermeable sheath of PVC extruded to fit the core or cores closely and in the case of multi-core cables, to fill the interstices between the cores.

When armouring is specified it shall consist of one layer of galvanized steel wire in the case of multi-core cables and non-magnetic metallic wire in the case of single core cables. Aluminium strip or tape armouring is not acceptable.

Where specified, an earth continuity conductor shall be provided in the armouring in accordance with SABS 150.

PB12.5.2 RESIN FILLED JOINTS

The resin filled joint kit shall comprise a self-sealing plastic mould of high mechanical strength having sufficient connector space.

The exact amount of cold hardening resin shall be provided in a two-compartment plastic bag.

The resin shall have absolute minimum shrinkage.

The mould and resin shall be completely waterproof and non-hygroscopic and shall be resistant to ultraviolet radiation.

PB12.5.3 CABLE BOX JOINTS

Cable boxes shall be manufactured of die cast aluminium material for normal conditions or glass fibre reinforced thermosetting compound where exposed to corrosive conditions.

The lid shall provide an absolute moisture barrier.

Boxes shall contain 2, 3, or 4 entries as required.

Unused entries shall be sealed with watertight blanking plugs.

Earth continuity shall be maintained through the box by means of the material of the box in the case of aluminium boxes or by means of earth straps and studs in the case of glass fibre reinforced boxes.

PB12.5.4 GLANDS FOR PVC-INSULATED CABLES

Glands to be used for terminating PVC/PVC/SWA/PVC cables shall be of the adjustable type.

Glands shall be suitable for general purpose 600/1000 Volt Grade cable with steel armouring.

The glands shall be made of nickel-plated bronze or brass.

The glands shall consist of a barrel carrying a cone bush screwed into one end and a nickel-plated brass nipple carrying a nickel-plated brass or a heavy galvanized steel locknut screwed into the other end. The galvanizing shall comply with SABS 763.

Non-watertight glands must be easily converted to watertight glands by means of a waterproofing shroud and inner seal kit. On the cable entry side of the barrel a concave groove shall be provided to accommodate the top rim of the waterproofing shroud.

The shrouds shall be made of non-deteriorating neoprene or other synthetic rubber, and shall be resistant to water, oil and sunlight. The shrouds shall fit tightly around the glands and cable.

Glands shall be provided with ISO threads and shall be suitable for the specified cable sizes.

Flame proof glands shall comply with SABS 808, Groups 1, 2a and 2b.

Suitable accessories shall be provided with glands to be used on ECC armoured cables to facilitate a bolted lug connection of the earth continuity conductors. Grooves cut into the barrel or cone bush to accommodate the earth continuity conductors are not acceptable.

For un-armoured cables the cone bush and compression ring of the gland shall be replaced with a synthetic rubber compression bush and ring to provide the required grip on the outer sheath of the cable.

PB12.5.5 TRENCHING**PB12.5.5.1 General**

The Contractor shall be responsible for all trenching excavations unless specified to the contrary.

The Contractor shall, before trenching commences, familiarize himself with the routes and site conditions and the procedure and order of doing the work shall be planned in conjunction with the general construction program for other services and building requirements.

The Contractor shall acquaint himself with the position of all the existing services such as storm water pipes, water mains, sewer mains, gas pipes, telephone cables, etc. before any excavations are commenced. For this purpose he shall approach this Engineer's representative, the local municipal authority and any other authority which may be involved, in writing.

The Contractor will be held responsible for damage to any existing services brought to his attention by the Engineer and shall be responsible for the cost of repairs.

The Contractor shall take all the necessary precautions and provide the necessary warning signs and/or lights to ensure that the public and/or employees on site are not endangered.

The Contractor shall ensure that the excavations will not endanger existing structures, roads, railways, other site constructions or other property.

PB12.5.5.2 Routes

Trenches shall connect the points shown on the drawings in a straight line. Any deviations due to obstructions or existing services shall be approved by the Engineer beforehand. Refer also to par. 9.10.

The Engineer reserves the right to alter any cable route or portion thereof in advance of cable laying. Payment in respect of any additional or wasted work involved shall be at the documented rates.

The removal of obstructions along the cable routes shall be subject to the approval of the Engineer.

PB12.5.5.3 Dimensions Of Trenches

Cable trenches for one or two cables shall not be less than 300 mm wide and need not be more than 450 mm wide. This dimension shall be valid for the total trench depth.

The width shall be increased where more cables are installed to allow for spacing of 100 mm. between cables.

Where trenches change direction or where cable slack is to be accommodated, the Contractor shall ensure that the requirements of the relevant SABS Specification regarding the bending radii of cables are met when determining trench widths.

Trench depths shall be determined in accordance with cable laying depths and bedding thickness.

Payment will be made on a volumetric excavation rate calculated on the basis of the given maximum dimensions or the actual dimensions, whichever is the lesser.

Cables shall be installed at a minimum depth of 600 mm. below final ground level.

All cable depth measurements shall be made to the top of the cable when laid directly in ground or to the top of the duct or sleeve where these are provided.

The above depths shall apply to the top layer where cables are installed in layers.

The Contractor may only deviate from the above depths provided prior authority in writing has been obtained from the Engineer. In this event the cables shall be protected with a suitable concrete covering.

The depth of cable pipes or ducts beneath railway lines or roads shall be not less than 1,1 m below the formation level.

PB12.5.5.4 Testing of Cables

Each cable shall be tested after installation in accordance with SABS 150.

LV cables shall be tested by means of a suitable megger at 1 kV and the insulation resistance shall be tabulated and certified.

PB12.5.5.5 Completion

The Engineer reserves the right to inspect the installation at any stage during the course of construction. Such inspections will, however, not deem the portions inspected as being complete or accepted and the Contractor shall remain responsible for completing the installation fully in accordance with the Contract Documents.

The Contractor shall carry out a final "as built" survey of the cable routes and present to the Engineer "as built" route plans of the complete installation. The following information shall be reflected on the plans or submitted as separate schedules with the plans:

- (a) Overall length of each cable.
- (b) Locations of all joints (if any) in relation to permanent reference points.

Dimensions shall be shown and the method of triangulation i.e. two dimensions to each joint, shall be used.

- (c) Identification of each cable.

The works will be deemed to be incomplete until all tests have been conducted successfully and all "as built" drawings and schedules have been handed to the Engineer.

PB12.6 LIGHT SWITCHES

PB12.6.1 GENERAL

This section covers the requirements for switches for use in general installations under normal environmental conditions.

PB12.6.2 Flush and Surface Mounted Switches

All switches shall be suitable for mounting in 100 x 50 x 50 mm boxes, shall comply with SABS 163 and shall bear the SABS mark.

Switches shall be of tumbler operated micro-gap type rated at 16A, 220/250 Volt.

Switches shall have protected terminals for safe wiring.

Contacts shall be of silver material.

On multi-lever switches, it shall be possible to individually change any of its switches.

The yoke strap shall be slotted to allow for easy alignment.

The covers of surface mounted switches shall have toggle protectors.

Where light switches are installed in partitions, they shall, where possible, be of the special narrow type intended for installation into the mullions.

PB12.6.3 Watertight Switches

Watertight switches shall be of the micro-gap type suitable for surface mounting and shall bear the SABS mark.

The housing shall be of galvanized cast iron or die cast aluminium with watertight cover plate and toggle.

The switch shall have a porcelain base and a quick acting spring mechanism and shall be rated at 16A, 220/250 Volt.

The ON/OFF positions shall be clearly marked on the switch housing.

PB12.7 SWITCHED SOCKET-OUTLETS**PB12.7.1 General**

This section covers the requirements for switched socket-outlets for use in general installations under normal environmental conditions.

PB12.7.2 Flush And Surface Mounted Switched Sockets

All switched socket-outlets shall be suitable for mounting in 100 x 100 x 50 mm or 100 x 50 x 50 mm boxes, shall comply with SABS 164 and shall bear the SABS mark.

Switches shall be of the tumbler operated micro-gap type rated at 16A, 220/250 Volt.

Terminals shall be enclosed for safe wiring.

Contacts shall be of silver material.

Safety shutters shall be provided on live and neutral openings.

The yoke strap shall be slotted to allow for easy alignment.

The covers of surface mounted switched sockets shall have toggle protectors.

Where 13A flat pin switched socket-outlets are specified, these shall comply with BS 1363.

PB12.7.3 Watertight Switched Sockets

The housing of watertight switched sockets shall be of galvanized cast iron or die cast aluminium with watertight machined joints.

The switch shall have porcelain base and a quick-acting spring mechanism and shall be rated at 16A, 220/250 Volt.

The ON/OFF positions shall be clearly marked on the switch housing.

The socket openings shall be rendered watertight by means of a gasketed cover plate, which is screwed onto the body of the unit. The cover plate shall be secured to the body of the unit by means of a chain.

PB12.7.4 Three-Phase Switched Socket-Outlets

Three-phase switched socket-outlets shall have 5 pins, one for each phase, neutral and earth. The current rating shall be a minimum of 32A. .

The units shall be interlocked to prevent switching on if the plug top is not installed.

The units shall be supplied complete with plug top.

The live terminals shall be shrouded and shall be completely safe when the plug top is removed.

Samples shall be submitted to the Engineer for approval prior to the installation.

PB12.8 TUBULAR FLUORESCENT LAMP LUMINAIRES FOR INTERIOR APPLICATIONS

PB12.8.1 GENERAL

Luminaries, associated equipment and control gear shall be new and unused and shall be supplied complete with lamps, control gear, diffusers, mounting brackets, etc. as applicable, and shall be delivered to site in a protective covering.

Lamps shall be delivered separately.

Bids shall be accompanied by full descriptive information of the luminaries offered. Photometric data, i.e. polar curves and coefficients of utilization certified by the SABS shall be submitted with Bids for all luminaries offered.

PB12.8.2 GENERAL TECHNICAL REQUIREMENTS

(a) General

Tubular fluorescent lamp luminaries shall comply fully with SABS 1119 and all amendments as well as the additional requirements of this specification. Luminaries which bear the SABS mark are preferred.

(b) Construction

A luminaire shall consist of a ventilated body manufactured of cold rolled sheet steel not less than 0,8 mm thick, suitably braced or stiffened to prevent distortion. The body shall be of sufficient strength for the mounting of the entire luminaire.

The luminaire body shall be designed to accommodate the control gear, wiring, lamp holders and, where applicable, the diffusers. It shall be possible to reach the control gear without disconnecting wiring or removing the luminaire.

Except for mounting holes and/or slots and the required openings in air-return luminaries, the back of the body channel shall be closed over the full length of the luminaire.

Suitable knock-outs shall be provided in the rear of the luminaire body for wire entry.

All components, including screws, bolts and nuts utilized in the construction of the luminaire or fixing of its components, shall be corrosion proof.

(c) Internal Wiring

Luminaires shall be completely wired internally. Conductors shall be protected with grommets where they pass through holes in the body.

The wiring shall be totally metal enclosed to prevent any possible contact with live components while changing lamps.

The conductor insulation shall be rated to withstand the temperature inside the luminaire body without deterioration.

The wiring shall terminate on a suitable terminal block. There shall be no joints in the internal wiring.

An earth terminal, welded to the luminaire body, shall be provided. To ensure good earth continuity the earth terminal shall not be spray painted. The earth conductor shall be connected to this terminal by means of a crimped lug.

(d) Lamp Holders

Lamp holders shall preferably be of the telescopic spring-loaded type. Where twist-lock type lamp holders are provided, the mounting of the holders shall be able to accommodate the tolerances experienced in the length of lamps and in the manufacture of luminaires.

(e) Control Gear

The control gear, ballasts, capacitors and starters shall be designed and manufactured to suit the control circuitry adopted.

Ballasts shall comply with SABS 890 and 891, suitable for operation on 220/250 Volt, 50 Hz supplies.

Ballasts shall further be suitable for the particular luminaire to ensure that the thermal limits specified in par. 3.5 of SABS 1119 are not exceeded.

Noisy ballasts will not be accepted and shall be replaced at no cost.

Starters shall comply with BS 3772. Starters with metal cans shall contain integral earthing facilities to earth the can upon insertion.

Starters shall be accessible from the outside of the luminaire, and the replacement of the starter shall not necessitate the removal of lamps.

(f) Capacitors

Capacitors shall comply with SABS 1250. The power factor of each complete fitting shall be corrected to at least 0,85.

(g) Lamps

Fluorescent lamps shall be suitable for the control circuitry used. Lamps shall comply with SABS 1041.

The light colour shall correspond to colour 2 (4300 K) of SABS 1041.

Lamps of the same colour shall be provided for an entire installation unless specified to the contrary.

There shall be no visible flicker in the lamps and lamps shall readily strike when switched on. Faulty lamps or ballasts shall be replaced at no cost to the Engineer.

PB12.8.3 CHANNEL LUMINAIRES

Channel luminaires shall consist of a ventilated, enclosed channel body with one or more lamps as specified. The channel body shall house the ballast, capacitor, terminals and internal wiring.

Provision shall be made for the addition of reflector wings and/or diffusers.

Three sets of mounting slots and knock-outs suitable for mounting onto standard round conduit boxes and/or 20 mm Ø. conduit pendant rods, shall be provided in the rear of the channel, one in the centre and one approximately one sixth from each end.

A knock-out suitable for a 20 mm Ø. conduit entry shall be provided at each end of the channel. The distance between the back of the luminaire and centre of the knock-out shall be approximately 25 mm.

The knock-outs shall be positioned on the centre line of the channel.

The body channel shall incorporate a removable cover acting as a reflector, manufactured of cold rolled steel, not less than 0,8 mm thick, designed and mounted to completely cover the interior of the body channel and its contents and extending over the full length of the luminaire up to the lamp holders.

The reflector shall be firmly held in position with a latching device consisting of knurled, coin slot, captive screws. Plastic, used as a spring mechanism, is not acceptable as a fixing device for reflectors. The action of the latching device shall not deteriorate due to use and/or ageing.

PB12.8.4 DUST AND SPRAY PROOF LUMINAIRES

PB12.8.4.1 CONSTRUCTION

The fluorescent luminaire shall be totally enclosed and dust- and moisture-proof with an IP55 rating. It shall be designed for and supplied with 2 x 58 watt lamps.

The body of the luminaire shall consist of die-formed glass-fibre reinforced polyester (GRP), which has an exceedingly long life under corrosive conditions or ultraviolet radiation.

The diffuser of the luminaire shall consist clear injection moulded polycarbonate with prisms on the inside and smooth outside.

The diffuser of the luminaire shall be firmly held in position by at least 8 injection-moulded thermoplastic clamp type catches.

A closed cell foam gasket shall be provided as a seal between the body and the reflector.

The geartray of the fitting shall be retained in place by two rotary latches obviating the need for tools when servicing the luminaire. It shall be secured to the body by nylon safety straps from which it can hang during opening of the fitting. The sheet metal geartray shall be finished in white polyester powder paint.

Rotolock lamp holders shall prevent accidental lamp removal. The lamp holders shall be of the bi-pin polycarbonate type which can accommodate both 26 mm *and* 38 mm diameter lamps.

The conductors shall be covered with a high temperature insulation rated at 1050C, 600V.

The electrical connection to the fitting shall be via a three-way, 15A terminal block.

One 20 mm diameter entry shall be provided at each end of the luminaire.

Switch start ballasts comply with the requirements of SABS 890 to operate both 26 mm and 38 mm lamps shall be used in the fitting.

Any openings cut into the back of the body of the fitting shall be sealed again with silicone rubber after wiring or cabling is complete.

Contractors shall ensure that the fitting is left completely dust and insect proof after working on the fitting for whatever reason.

PB12.8.5 EXTERIOR SECURITY LIGHTS

The luminaire shall consist of a high pressure die cast aluminium body with non-discolouring prismatic high impact acrylic diffuser bowl and shall be designed to operate 125 Watt mercury vapour and 70 Watt high pressure sodium/metal halide lamps.

The luminaire shall bear the SABS 1464 safety mark.

The luminaire shall have a degree of protection that complies with SABS 1222:

The lamp compartment shall have a rating of 1P66.

The body shall be supplied with three mounting holes.

Electrical cable entry shall be via a compression type gland at the rear of the luminaire.

The diffuser bowl shall be manufactured from borosilicate glass with internal prisms.

The prisms shall be restricted to the inside of the bowl and shall be carefully formed to work in conjunction with the reflector to provide a spacing to mounting height ratio of up to 8: 1, whilst controlling excessive glare.

The bowl shall be seated in a rigid high-pressure die cast aluminium frame with two silicon sponge gasket systems.

This frame assembly shall be held to the body by four stainless steel M6 Alien head captive screws located outside the sealed lamp compartment.

A wire guard shall be installed over the fitting. The type of wire guard offered shall be approved by the Department as most commercially available wire guards are not suitable to withstand vandalism.

A high purity, single piece, die formed aluminium reflector shall be mounted on the reflector back plate.

Fine slots in the reflector, aligning with the reflector plate, shall ensure precise positioning and consistent optical performance.

The control gear shall be mounted directly onto the body to provide optimum heat dissipation. It shall be suitable for operation with the specified rating of the lamp on a 230V +3%/-10% 50 Hz single-phase system.

All control gear components shall be removable and bear the relevant SABS mark.

All internal wiring shall be Teflons coated with protective sleeving to prevent damage by possible abrasion.

All screws, bolts and metal parts shall be stainless steel or non-corrosive material.

Mains connections shall be by means of a suitable screw terminal block with a wire clamping contact. Ignitors, where applicable, shall be of the superposed pulse type.

The luminaire shall be power factor corrected to a minimum of 0,85.

Contractors shall ensure that the fitting is left completely dust and insect proof after working on the fitting for whatever reason.

PD ELECTRICAL WORK AT BOREHOLES AND SMALL INSTALLATIONS**PD1.1 SCOPE OF ELECTRICAL INSTALLATION WORK**

This section includes the design, manufacture, supply delivery, offloading, storing, if necessary, erection, painting commissioning, testing and maintenance during the maintenance period and final handing-over of all the necessary electrical equipment (unless otherwise indicated below) which shall include the following:

- * Supply and installation of the power supply cables from the ESKOM meter point to the MCC or starter panel.
- * Supply and installation of motor control switchgear panels.
- * All control cabling in pumpstations or on sites.
- * Earthing and lightning protection of electrical equipment.
- * Installation of all instrumentation and control devices

This specifications covers electrical installations using transformers up to and including 1 000 kVA rating, 600/1 000 V cables up to 240 mm² 4-core, motors up to 185 kW as well as all switchgear, equipment and instrumentation used in conjunction with such installations.

This Specification further describes the usual materials required for electrical installations and general methods of installing these materials. This Specification forms a part of any project specifications which are bound together with this specification, or issued as a separate volume. Where drawings are issued with this specification, or where standard drawings of the Department are referred to in this specification, such drawings shall be read together with this specification and shall form part of this specification for all intents and purposes.

PD1.2 APPLICATION

The specifications here following are essentially functional specifications only. The contractor shall design the various installations and produce complete constructional drawings and diagrams and complete lists of equipment complying with the requirements set out below and with those of the standard specifications listed further herein. The Contractor shall then submit all this information to the Engineer for approval before commencing manufacture of any motor control panels or small starter panels or power distribution boards.

PD2 GENERAL REQUIREMENTS

All material and equipment supplied and/or installed under this Contract shall be new and of high class quality and shall comply with the requirements laid down in the latest editions of the SABS, BSS or IEC specifications.

All materials shall be subject to the approval of the Department.

Departmental standard specifications for various materials to be used under this contract are available from the Department in Pretoria.

Similar equipment supplied under this contract must be identical in all respects and it shall be possible to interchange parts of identical equipment.

A Contract shall contain equipment of only one supplier for a specific type of equipment, such as, for instance, contactors or circuit breakers, unless the project specification or this specification allows deviation from this requirement.

Materials wherever possible must be locally available in South Africa and must preferably be of South African manufacture.

Materials removed from a specific site or has become redundant shall not be re-used on another site without the written permission of the Department.

The use of second hand materials are strictly forbidden.

The Department will also not for over supply of materials. Contractors shall plan their work and shall assess the quantities of material to be used. Unused materials shall be removed from site after the completion of the project as the Department will not accept for material on site, which have not been built into the Contract.

Cables, wire and conduit lengths will be paid on the basis of "As Built" quantities only.

Any quantities in any Schedule which may form part of this document or which may be issued as a separate schedule must be regarded as being provisional as far as re-measurable material is concerned and the value of such material on site will be paid for per installed quantity.

Invoices for payment shall contain full details of the material installed and work done since the previous payment and shall also show the materials and work done as per previous certificates so that an assessment can be made of the progress of the work.

Test or commissioning results obtained shall be submitted in detail reports together with the invoices.

Wording such as "motor not earthed" will not be acceptable.

The serial numbers of equipment or specific detail descriptions of positions and types of equipment worked on shall be shown on invoices and schedule item work shall refer to the schedule item number and the specific application or position where applied shall be detailed on invoices.

Invoices for materials purchased, together with the signatures of the recipients, shall be submitted together with invoices.

PD3 COMPLIANCE WITH LAW AND REULATIONS

The installation, testing and commissioning of electrical equipment shall always comply with the requirements, stipulations and regulations contained in the following Acts:-

Machinery and Occupational Safety Act 85 of 1993 with special reference to Section 1 (Act & Regulations), Section 2 (Administrative Regulations), Section 6 (Electrical Installation Regulations), Section 13 (Driven Machinery Regulations), Section 14 (Electrical Machinery Installations), Section 15 (General Machinery Regulations) and Section 16 (General Safety Regulations).

Special mention is made to Annexure A1 of Section 6, which will be applicable on completion of the work.

The Mines and Works Act, No.27 of 1956 and subsequent amendments and regulations issued thereunder.

The Electricity Act, No.40 of 1958.

Explosives Act, No.26 of 1956.

Code of Practice for the Wiring of Premises - SABS 0142

The contractor shall be responsible for serving of all notices and paying of all fees due in terms of the above laws and regulations.

PD4 TRANSPORT OF EQUIPMENT

Contractors will be responsible for the transport of all materials and equipment to the site and on the site.

All material and equipment must be thoroughly packed and any damage that may occur must be repaired or corrected by the Electrical Contractor before installation and testing proceeds.

PD5 LOCAL AUTHORITY

The Contractor must arrange with the Supply Authority, Administration, TELKOM and other authorities to make sure that their regulations are met when the main incoming supply and the substation equipment is installed.

PD6 DRAWINGS AND DATA

Where Bidder's offer items that differ from those as specified, the Bidder must submit drawings, diagrams and full technical details of such items on the closing date of Bids.

PD7 CHANGEABILITY

Equipment of the same type shall be obtained from one manufacturer and components shall be changeable.

END OF SECTION 4.3

SECTION 4.4

BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SECTION 4.4

SPECIFICATION DRAWING LIST



REPUBLIC OF SOUTH AFRICA



DEPARTMENT: WATER AND SANITATION

SECTION 4.4: SPECIFICATION DRAWINGS LIST:

TYPICAL BOREHOLE INSTALLATION DETAILS

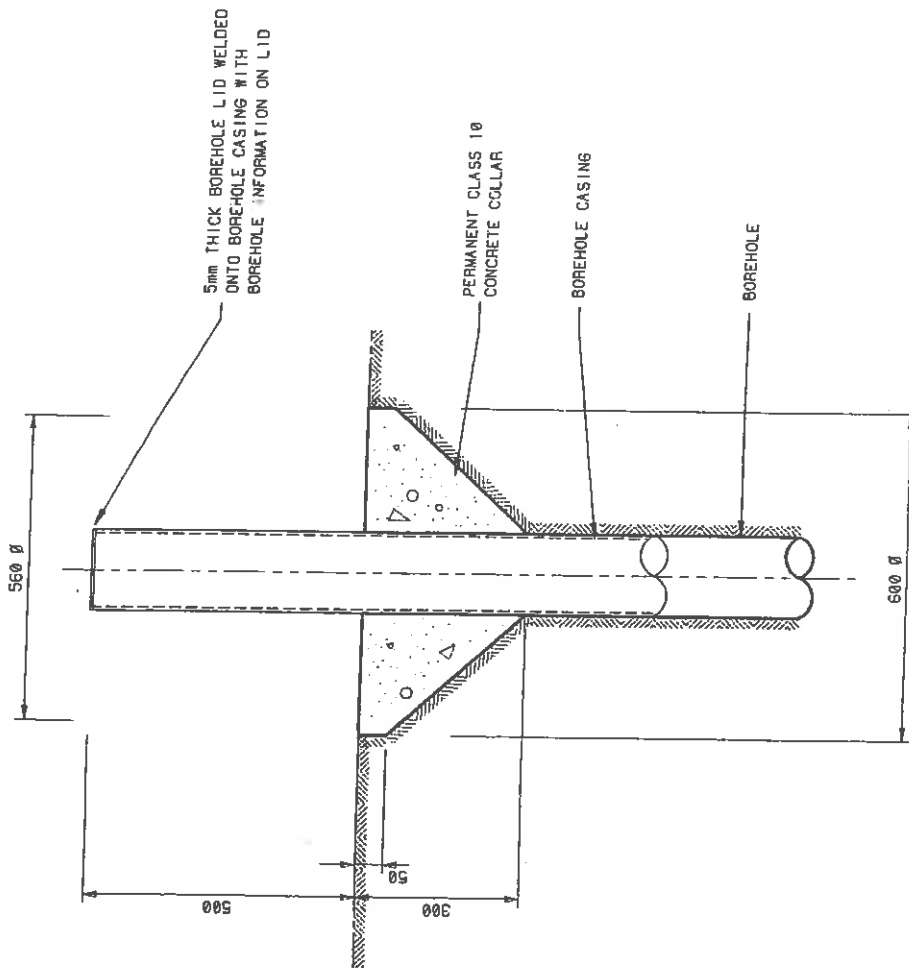
DRAWING NO.	REVISION	DESCRIPTION
1. BOREHOLES		
125 812/97 ME		Sealing of Boreholes
125 813/97 ME	1	Borehole Discharge Pipe work
125 814/97 ME		Detail of Borehole Hand pump Installation
131 159/99 ME		Fabricated Belt Guard for Diesel Borehole Installation
131 160/99 ME		Fabricated Belt Guard for Electrical Borehole Installation
131 161/99 ME		Sliding Base Detail for Diesel Borehole Installation
131 372/99 ME		Diesel Borehole Installation Typical Diesel Stand & Exhaust Details
2. PUMPHOUSE		
125 815/97 ME	2	Pump house Floor Layouts: Diesel Engine
125 816/97 ME	1	Pump house Floor Layouts: Electric Motor
125 817/97 ME	1	Pump house: Wall Panels
125 818/97 ME		Pump house: Wall & Roof Panels
GR10/001		Pre-Cast pump room
3. WATER TANKS		
125 819/97 ME		Non Elevated Tank: Plan
125 820/97 ME		Non Elevated Tank: Elevation
125 821/97 ME		Non Elevated Tank: Miscellaneous Details
125 822/97 ME		Elevated Tank Stand: Foundation Layout
125 823/97 ME		Elevated Tank Stand: Plan & Floor Layout
125 824/97 ME	1	Elevated Tank Stand: Sections
125 825/97 ME	1	Elevated Tank Stand: Miscellaneous Details
125 826/97 ME		Elevated Tank Stand: Miscellaneous Details
125 827/97 ME		Elevated Tank: Layout Plan (Single Tank)
125 828/97 ME		Elevated Tank: Section (Single Tank)
125 829/97 ME		Elevated Tank: Section
125 830/97 ME		Elevated Tank: Layout Plan (Multiple Tanks)
125 831/97 ME		Elevated Tank: Section (Multiple Tanks)
4. RESERVOIR RELATED DETAILS		
125 832/97 ME		Reservoir: Level Indicator Details
125 833/97 ME		Reservoir: Bottom Inlet/Outlet Details
125 834/97 ME		Reservoir Top Inlet Detail Using an Equilibrium Float Control Valve
125 835/97 ME		Reservoir Top Inlet Detail Using a Leveldex Float Control Valve

**5. PIPELINE AND GENERAL
RELATED DETAILS**

125 836/97 ME	Single/Double Standpipe Details
125 837/97 ME	Domestic Draw-off with Double Outlet
125 838/97 ME	Valve Box for Line Valves 300 ND and Smaller
125 839/97 ME	Concrete Thrust Block: Diagram
125 840/97 ME	Concrete Thrust Block: Configuration
125 841/97 ME	Pipe Bedding Details for Rigid Pipes
125 842/97 ME	Pipeline Marker (Rectangular)
125 843/97 ME	Air Valve Details: 25 ND Single Orifice
125 844/97 ME	Air Valve Details: 50 ND Combination
125 810/97 ME	Standard Locking Device (when required)
125 811/97 ME	Fabricated Manhole Cover
131 860/99 ME sheet 1 of 7	General Arrangement of Borehole Starter Panel
131 861/99 ME sheet 2 of 7	Power Diagram of Dol Borehole Starter
131 862/99 ME sheet 3 of 7	Control Diagram for Dol Borehole Starter Level Control and Pressure Switch Control
131 863/99 ME sheet 4 of 7	Control Diagram of DOL Borehole Starter Level Control and Pressure Switch Control
131 864/99 ME sheet 5 of 7	Power Control Diagram of Star-Delta Borehole Starter
131 865/99 ME sheet 6 of 7	Control Diagram for Star-Delta Borehole Starter Level Control and Pressure Switch Control
131 866/99 ME sheet 7 of 7	Control Diagram for Starter-Delta Borehole Starter Pressure Control and Flow Switch Control

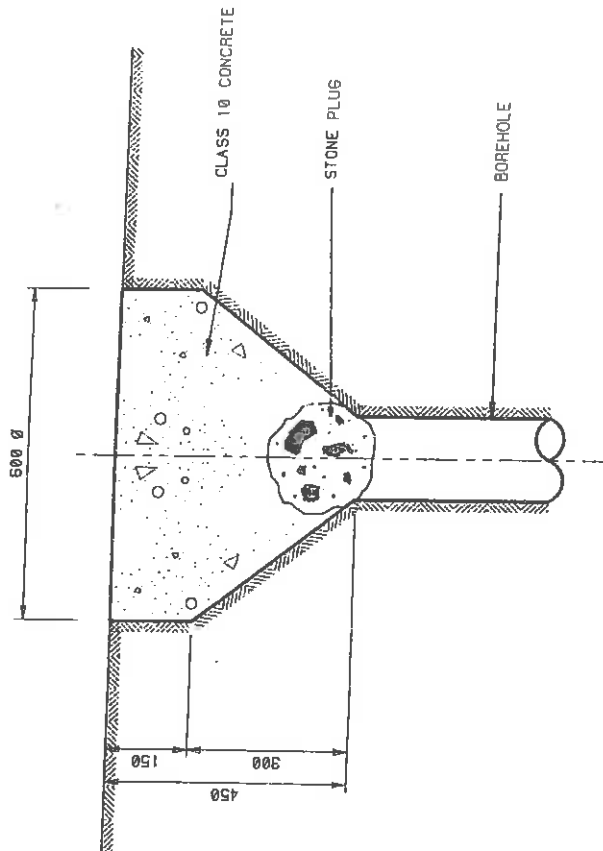
* Drawings follow on next page

1. BOREHOLES



SUCCESSFUL BOREHOLE
1:10

50mm ON ORIGINAL SCALE



UNSUCCESSFUL BOREHOLE
1:10

NO		DATE		REVISIONS		DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING TECHNICAL DESIGN SERVICES : <i>W. J. J. J. J.</i> 17/3/99 ENGINEER : <i>W. J. J. J. J.</i> 17/3/99 CHIEF ENGINEER (Pr. Eng) : <i>W. J. J. J. J.</i> 17/3/99 DIRECTOR (Pr. Eng) : <i>W. J. J. J. J.</i> 17/3/99 TENDER No. /										DESIGNED : EKSTEEN, V.D. WALT & NISSEN DRAWN : EKSTEEN, V.D. WALT & NISSEN CHECKED : EKSTEEN, V.D. WALT & NISSEN CALCULATIONS FILE : CONTRACT No.				KEY CODES TYP BGD SEA DET			
ALL DIMENSIONS IN MILLIMETRES						DO NOT SCALE DRAWING						PROVINCE : NORTHERN DISTRICT : LOCALITY No. : ZZZZ-04 OTHER No. 9522.13.3W 1 SHEET 3 OF REG. No. 125 812/97ME											

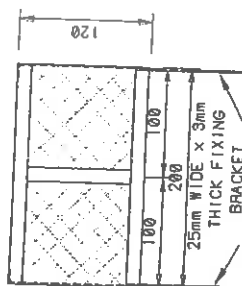
REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER

TYPE DRAWING
SEALING OF BOREHOLES

PROVINCE : NORTHERN DISTRICT :
LOCALITY No. : ZZZZ-04
OTHER No. 9522.13.3W
1 SHEET 3 OF
REG. No. 125 812/97ME

GENERAL NOTES

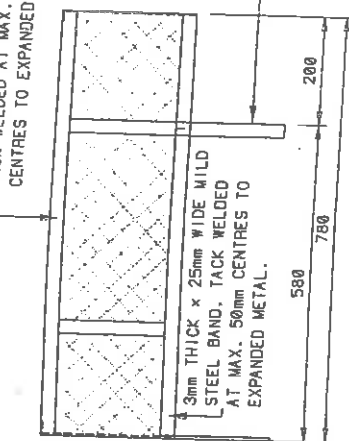
- ii ALL DIMENSIONS TO BE VERIFIED ON SITE
 - iii LENGTH AND POSITION OF HRA LEGS TO BE DETERMINED ON SITE
 - iv ALL WELDING TO BE FULL STRENGTH, FULL PENETRATION
 - vi ENTIRE BELT GUARD TO BE TREATED AS FOLLOWS :-
- SHOP PAINTING
- a) STEELWORK SHALL BE WIRE BRUSHED AFTER FABRICATED TO LEAVE A SMOOTH FINISH FREE OF RUST, SCALE, GREASE OR ANY SUBSTANCE DELETERIOUS TO THE FINAL PROTECTIVE COATING.
 - b) WITHIN 4 HOURS AFTER THE COMPLETION OF WIRE BRUSHING, ONE COAT OF AN APPROVED ONE-PACK ETCHING PRIMER SHALL BE FOLLOWED BY ONE COAT OF AN APPROVED UNDERCOAT.
 - c) TWO FINISHING COATS OF AN APPROVED ALKYD ENAMEL SHALL BE APPLIED 24 HOURS AFTER THE APPLICATION OF THE UNDERCOAT. THE COAT SHALL BE AS PER SABS 684 TYPE B AND SHALL PROVIDE A DRY FILM THICKNESS BETWEEN 25 AND 30 MICRON. THE COLOUR OF THE FINAL COAT SHALL BE SIGNAL RED. COLOURS 279 NO. 0291
- PAINTING AFTER ERECTION
- d) AFTER ERECTION ALL AREAS WHERE THE PAINTWORK HAS BEEN DAMAGED SHALL BE TOUCHED UP AS SPECIFIED IN a) b) AND c) ABOVE



VIEW A

SCALE 1:10

25mm x 25mm x 3mm HRA BAND, TACK WELDED AT MAX. 50mm CENTRES TO EXPANDED METAL



25mm wide x 3mm thick x 350 long mild steel flat fixing bracket bolted to motor (exact length to be determined at site).

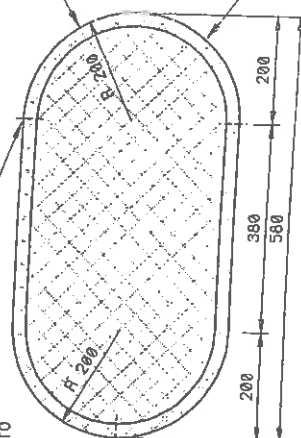
ELEVATION

SCALE 1:10

1 x 12mm DIA HOLE FOR M10 FIXING BOLT TO BE DRILLED IN BAND SO AS TO CORRESPOND WITH HOLE IN FIXING BRACKET WELDED TO MOTOR MOUNTING BRACKET

ENTIRE BELT GUARD (EXCEPT FOR BANDINGS) TO BE FABRICATED FROM EXPANDED METAL SHEETING - 'MENTEX' GENERAL PURPOSE MESH REF. 130 HAVING 8mm x 10mm OPENING AND 2mm WIDE x 1mm THICK STANDS

25mm x 25mm x 3mm HRA BAND WELDED TO INSIDE EDGE OF UPPER BAND AND UNDERSIDE OF TOP MESH CLOSURE - END MEMBERS TO BE SHAPED TO SUIT RADIUS



PLAN

SCALE 1:10

REVISIONS

No DATE

DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING

TECHNICAL DESIGN SERVICES

ENGINEER :

CHIEF ENGINEER (Pr. Eng)

DIRECTOR (Pr. Eng)

TENDER No. /

DESIGNED : EKSTEEN, V.D. WALT & NISSEN

DRAWN : EKSTEEN, V.D. WALT & NISSEN

CHECKED : EKSTEEN, V.D. WALT & NISSEN

CALCULATIONS FILE :

CONTRACT No.

KEY CODES

TYP

860

PMS

ASD

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER

TYPE DRAWING

FABRICATED BELT GUARD FOR ELECTRICAL BOREHOLE INSTALLATIONS

PROVINCE : NORTHERN DISTRICT : LOCALITY No.: ZZZZ-04

OTHER No. 9522.13.37W 1 SHEET 2 OF REG. No. 1311 60/99ME

ALL DIMENSIONS IN MILLIMETRES DO NOT SCALE DRAWING



PLAN
SCALE 1:5



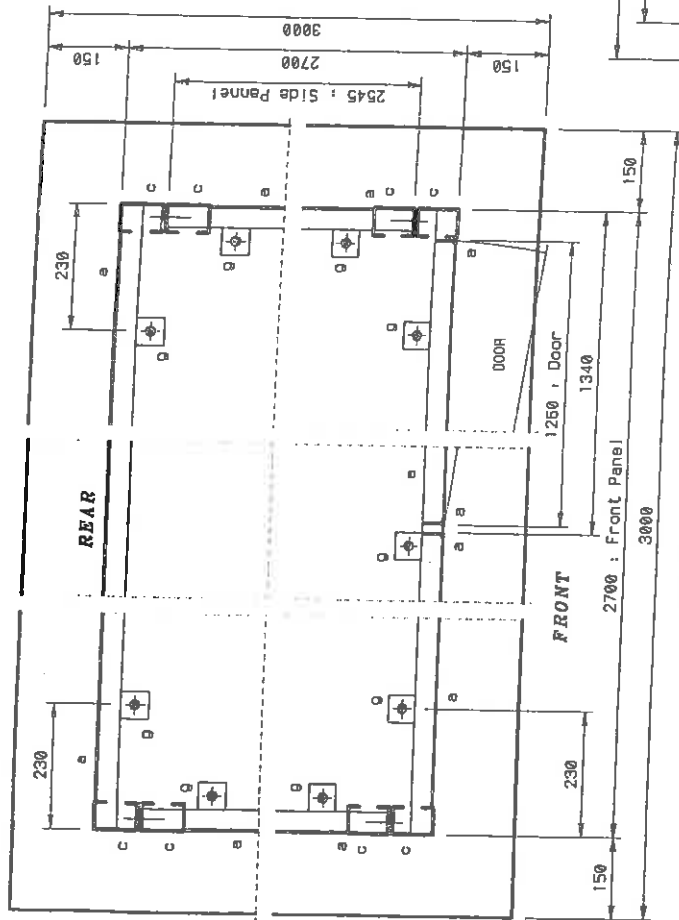
No	DATE	REVISIONS
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[illegible]

REG. No. 131 151/99MF

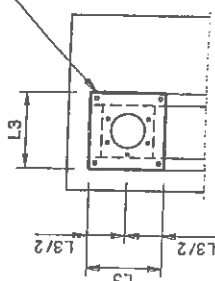
d) PAINTING AFTER ERECTION
AFTER ERECTION ALL AREAS WHERE THE PAINTWORK
HAS BEEN DAMAGED SHALL BE TOUCHED UP AS
SPECIFIED IN SECTION 11.01

2. PUMPHOUSE

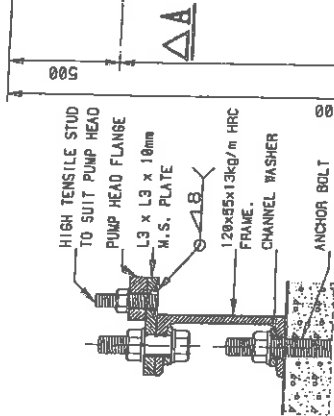


FLOOR PLAN
SCALE 1:10

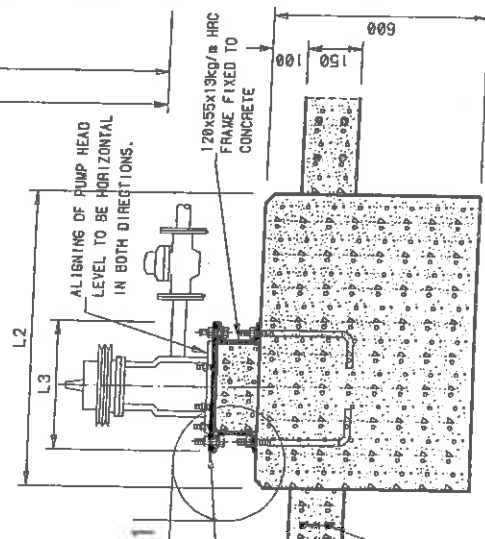
L3 x L3 x 10mm U.S. PLATE TO BE BOLTED TO HRC FRAME WITH 4/M16 GALVANISED BOLTS COMPLETE WITH CHANNEL WASHERS AND NUTS. THE PLATE TO HAVE A CLEARANCE HOLE FOR BOREHOLE CASING AND 5 H.T. STUDS FULLY WELDED AND SPACED TO SUIT PUMP DRIVE HEAD.



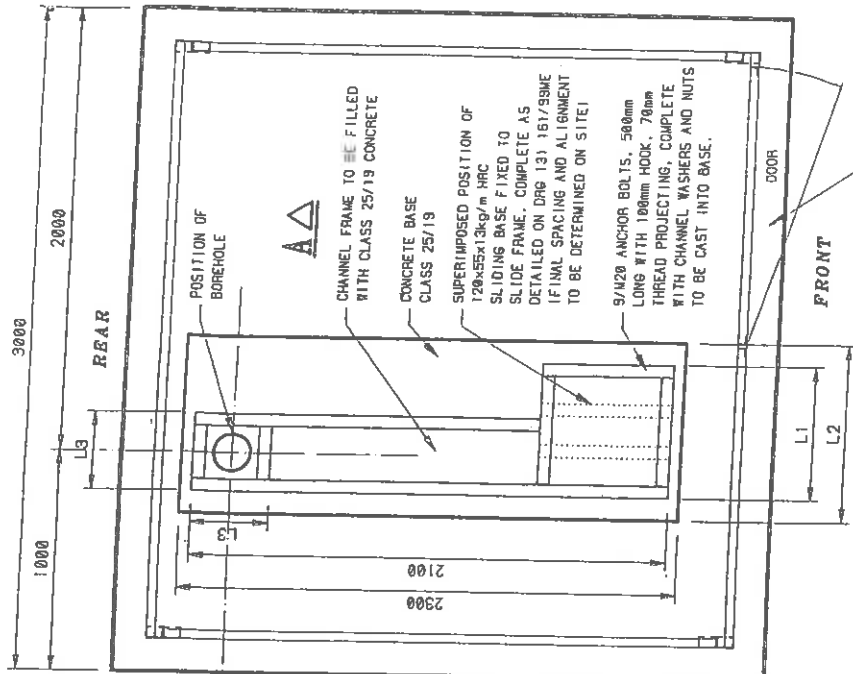
PUMP HEAD MOUNTING DETAIL
SCALE 1:25



DETAIL 1
SCALE 1:5



SECTION A-A
SCALE 1:15



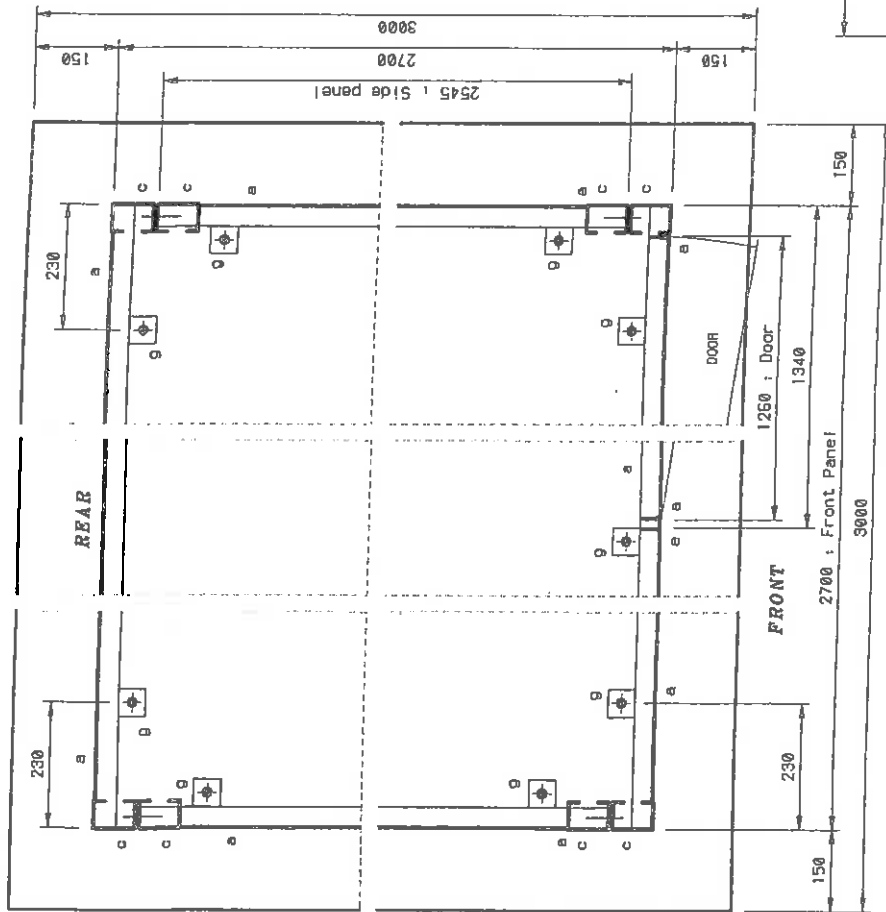
SLAB & BASE LAYOUT
SCALE 1:25

NOTE: FOR CORROSION PROTECTION SEE DRG. NO. 131 159/99ME

ENGINE SIZE	PUMP HEAD	L1	L2	L3
SMALL ENGINES (max. 5kw)	LIGHT DUTY	500	800	350
MEDIUM ENGINES (max. 14kw)	HEAVY DUTY	500	800	350
LARGE ENGINES (max. 25kw)	HEAVY DUTY	1000	1200	650

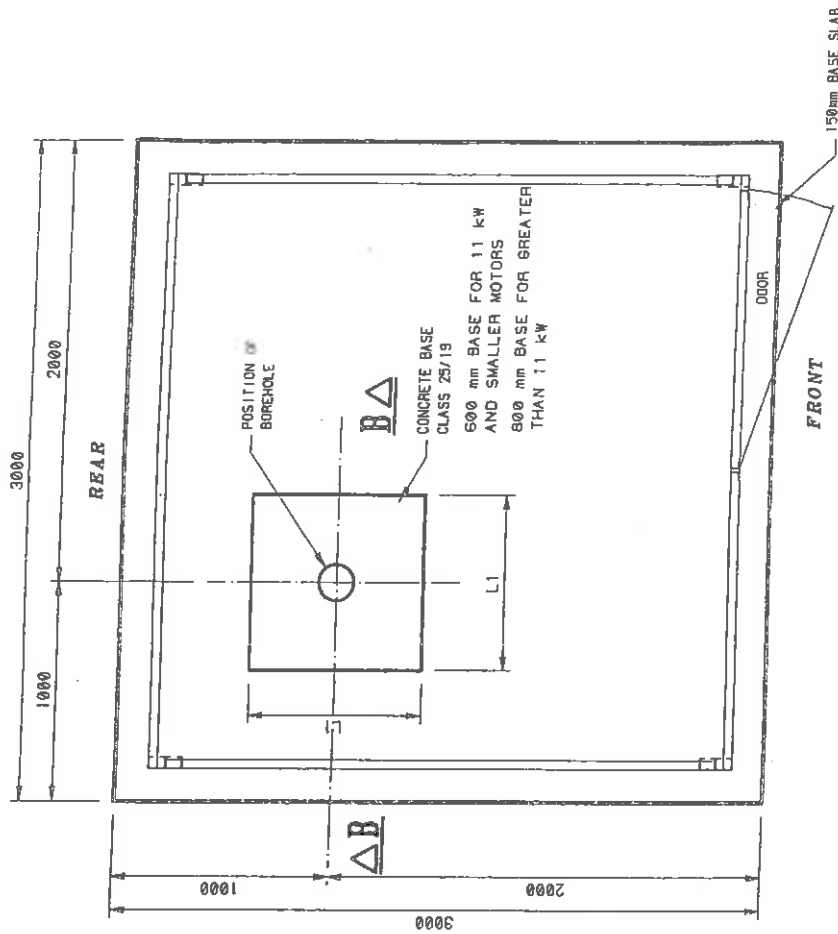
REVISIONS			
No	DATE	REVISIONS	
1	98-03	DIMEN'S L3 FOR SMALL ENGINES ALTERED- J A NEL	
2	99-01	DETAIL ADDED & GENERAL AMENDMENTS - J A NEL	
ALL DIMENSIONS IN MILLIMETRES DO NOT SCALE DRAWING			
DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING TECHNICAL DESIGN SERVICES: <i>[Signature]</i> DATE: 17/3/99 ENGINEER: <i>[Signature]</i> 17/3/99 CHIEF ENGINEER (Pr-Eng) <i>[Signature]</i> DIRECTOR (Pr-Eng) <i>[Signature]</i> 17/3/99 TENDER No. / CONTRACT No. / CALCULATIONS FILE: / DESIGNED: EKSTEEN, V.D. WALT & NISSEN DRAWN: EKSTEEN, V.D. WALT & NISSEN CHECKED: EKSTEEN, V.D. WALT & NISSEN KEY CODES TIP BGD PMS ASD			

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
 DIRECTOR GENERAL: M. MULLER
PUMPHOUSE : FLOOR LAYOUTS : DIESEL ENGINE
 PROVINCE : NORTHERN DISTRICT : LOCALITY No.: ZZZZ-04
 OTHER No. 9522.13.6W 1 SHEET 4 OF
 REG. No. 125 815/97ME R2



FLOOR PLAN
SCALE 1:10

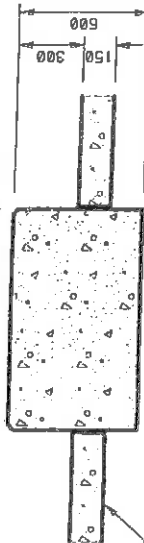
50mm ON ORIGINAL SCALE



SLAB & BASE LAYOUT
SCALE 1:25

NOTE :
FOR CORROSION PROTECTION SEE
DRG. NO. 131 159/98ME

MOTOR SIZE	PUMP HEAD	L1
SMALL MOTOR (max. 5.5kw)	LIGHT DUTY	600
MEDIUM MOTOR (max. 11kw)	HEAVY DUTY	600
LARGE MOTOR (max. 22kw)	HEAVY DUTY	800



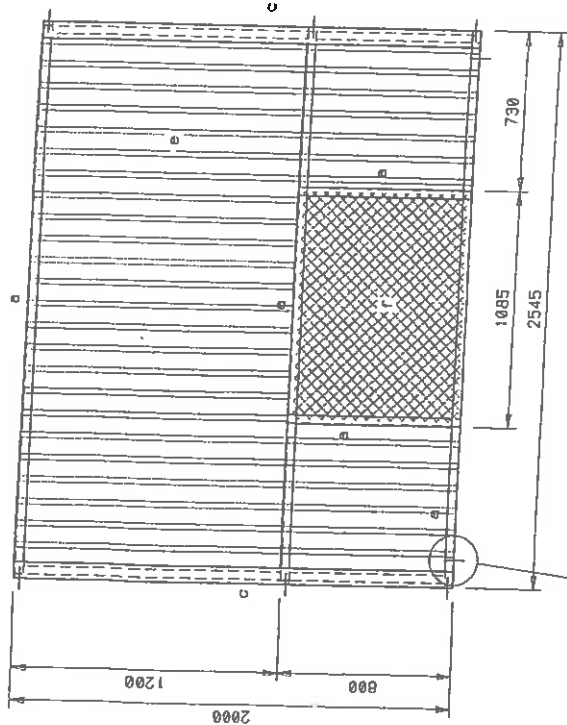
SECTION B-B
SCALE 1:25

No		DATE	REVISIONS	DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING		REPUBLIC OF SOUTH AFRICA DEPARTMENT OF WATER AFFAIRS AND FORESTRY DIRECTOR GENERAL, M. MULLER	
1	SS-03		DIMENSIONS OF PLINTH ALTERED - A, NEL	TECHNICAL DESIGN SERVICES	ENGINEER :	DESIGNED : EKSTEEN, V.D. WALT & NISSEN	KEY CODES
				CHIEF ENGINEER (Pr-Eng)	17/3/99	DRAWN : EKSTEEN, V.D. WALT & NISSEN	TYP
				DIRECTOR (Pr-Eng)	17/3/99	CHECKED : EKSTEEN, V.D. WALT & NISSEN	980
				TENDER No. /	17/3/99	CALCULATIONS FILE :	PMS
ALL DIMENSIONS IN MILLIMETRES				DO NOT SCALE DRAWING			
OTHER No. 9522.13.7W				LOCALITY No.: ZZZZ-04			
2 SHEET 4				REG. No. 125 816/97ME R1			

PUMPHOUSE : FLOOR LAYOUTS : ELECTRIC MOTOR

PROVINCE : NORTHERN DISTRICT : LOCALITY No.: ZZZZ-04

OTHER No. 9522.13.7W 2 SHEET 4 REG. No. 125 816/97ME R1



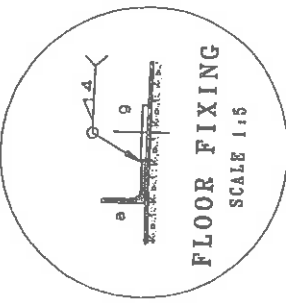
SIDE PANEL (2x)
SCALE 1:25

LEGEND:

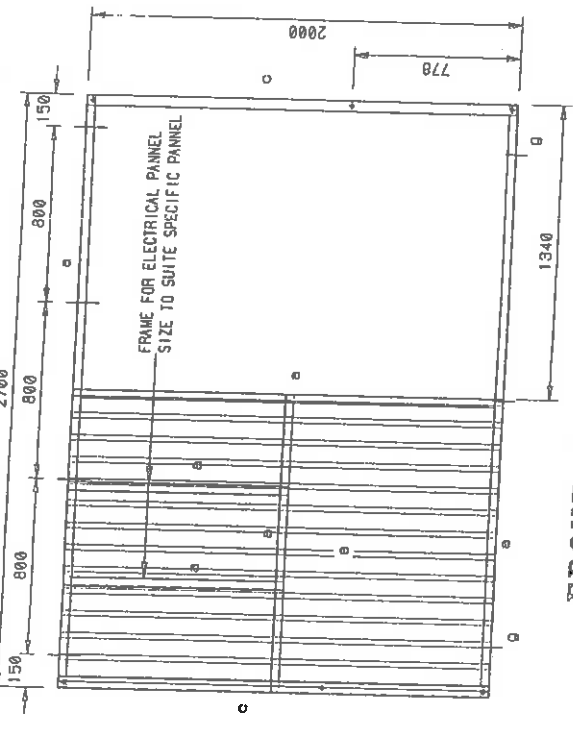
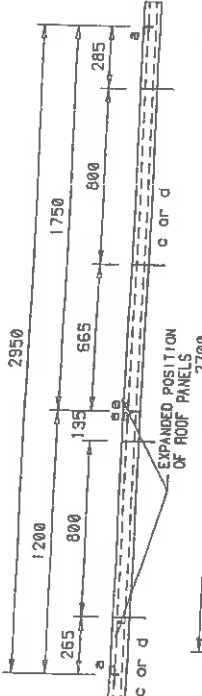
- a : 40 x 40 x 4 HRA
- b : 50 x 50 x 4 HRA x 100 long
- c : 75 x 50 x 20 x 2,5 CRCL
- d : 150 x 50 x 20 x 2,0 CRCL
- e : 0,6mm IBR SHEETING OR
- f : 0,5mm FULHARD IBR SHEETING
- g : VALMATEX REF. 63200 OR
- h : EQUIVALENT EXPANDED METAL.
- i : 50 x 50 PL 5 WITH 140 HOLE
- j : FOR 12mm x 75mm LONG RAWL BOLT
- k : 6,4mm: LARGE FLANGE, STEEL MAND-
- l : REL, ZINC PLATED, ALUMINIUM RIVET.

NOTE:

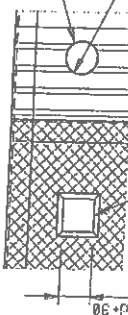
HRA = HOT ROLLED ANGLE
CRCL = COLD ROLLED LIPPED CHANNEL
ALL HOLES 14mm Ø FOR M10 BOLTS.
M10 x 25mm BOLTS : 19x REQUIRED.



FLOOR FIXING
SCALE 1:5



FRONT PANEL (1x)
SCALE 1:25



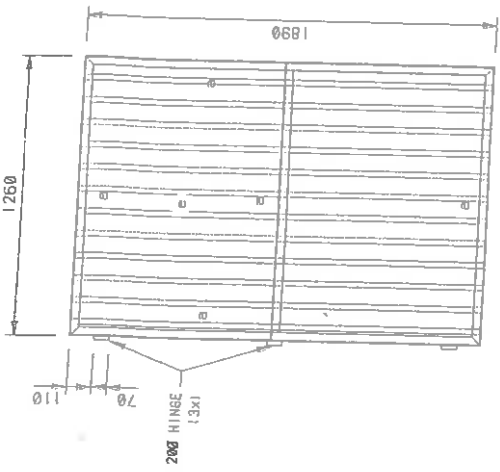
HOLE TO BE DRILLED INTO IBR SHEETING WITH A MIN. OF 15mm CLEARANCE AROUND PIPEWORK

NOTE : THE EXACT POSITION OF HOLES TO BE DETERMINED ON SITE

25 x 25 x 3 M.S. PLATE FRAME WITH 15mm CLEARANCE AROUND PIPEWORK. TO BE WELDED TO MESH TO FORM AN OPENING FOR DISCHARGE PIPEWORK.

TYPICAL DETAIL OF DISCHARGE PIPEWORK OPENINGS
SCALE 1:10

DOOR PANEL (1x)
SCALE 1:25



NAME PLATES

- TWO NAMEPLATES REQUIRED
- 10mm PUNCHED LETTERS
- TO BE INSTALLED AS FOLLOWS:
- * ONE NAMEPLATE INSIDE THE PUMPHOUSE
- * ONE NAMEPLATE OUTSIDE THE PUMPHOUSE (PUMPHOUSE DOOR - OUTSIDE POSITION)
- INFORMATION REQUIRED ON EACH NAMEPLATE

BORHOLE No.	DATE INSTALLED
STATIC WATER LEVEL (m)	DEPTH OF PUMP INLET (m)
DEPTH OF BOREHOLE (m)	PUMPING RATE (l/s)
RECOMMENDED PUMPING TIME (hr/day)	TYPE AND PIPE NAME
CONTRACTORS NAME	

DIRECTORATE MECHANICAL & ELECTRICAL ENGINEERING

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER

TYPE DRAWING
PUMPHOUSE : WALL PANELS

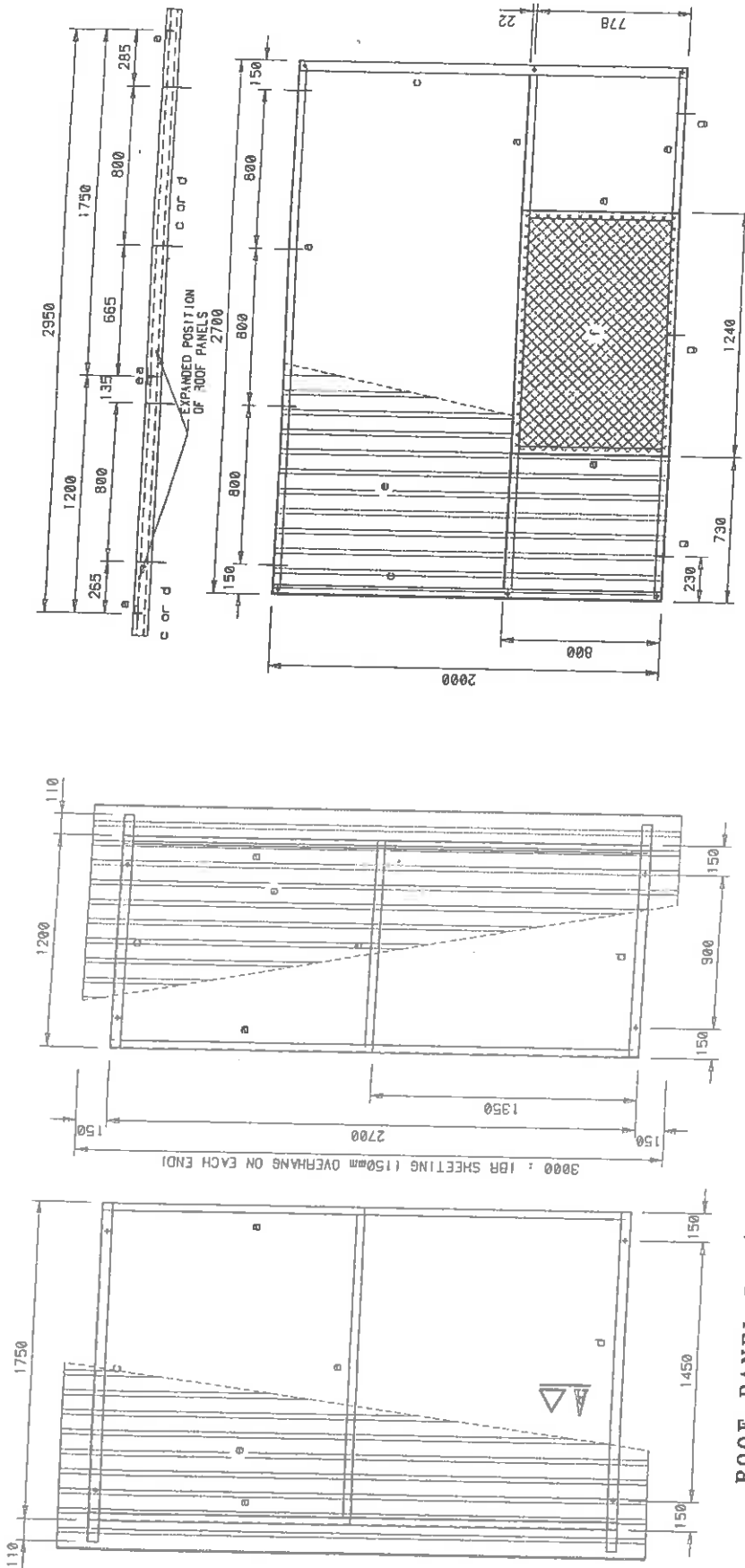
PROVINCE : NORTHERN DISTRICT : LOCALITY No.: ZZZZ-04
OTHER No. 9522.13.8W 3 SHEET 4
REG.No. 125 817/97ME R1

No	DATE	REVISIONS
1	95-01	GENERAL AMENDMENTS ADDED - A.NEL
DO NOT SCALE DRAWING		
ALL DIMENSIONS IN MILLIMETRES		
TENDER No. /		
CONTRACT No.		
CALCULATIONS FILE:		
CHECKED: EKSTEEN, V.D. WALT & NISSEN		
DRAWN: EKSTEEN, V.D. WALT & NISSEN		
DESIGNED: EKSTEEN, V.D. WALT & NISSEN		
DATE: 17/3/99		

TECHNICAL DESIGN SERVICES
ENGINEER :
CHIEF ENGINEER (P-Eng)
DIRECTOR (P-Eng)

17/3/99
17/3/99
17/3/99

KEY CODES
TYP
830
PWS
DET



ROOF PANEL R1 (1x) ROOF PANEL R2 (1x)

ROOF PANELS

NOT TO SCALE

REAR PANEL (1x)

SCALE 1:25

SECTION A

SCALE 1:10

No	DATE	REVISIONS

ALL DIMENSIONS IN MILLIMETRES	DO NOT SCALE DRAWING
-------------------------------	----------------------

TECHNICAL DESIGN SERVICES	DESIGNED: EKSTEEN, V.D. WALT & NISSEN	KEY CODES
ENGINEER :	DRAWN : EKSTEEN, V.D. WALT & NISSEN	TYPE
CHIEF ENGINEER (Pr. Eng)	CHECKED: EKSTEEN, V.D. WALT & NISSEN	B60
DIRECTOR (Pr. Eng)	CALCULATIONS FILE:	PMS
TENDER No. /	CONTRACT No.	DET

DIRECTORATE-MECHANICAL & ELECTRICAL ENGINEERING

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER
TYPE DRAWING
PUMPHOUSE : WALL & ROOF PANELS
PROVINCE : NORTHERN DISTRICT :
OTHER No. 9522.13.9W 4 SHEET 4
LOCALITY No.: ZZZZ-04
REG. NO. 125 818/97ME

50mm ON ORIGINAL SCALE



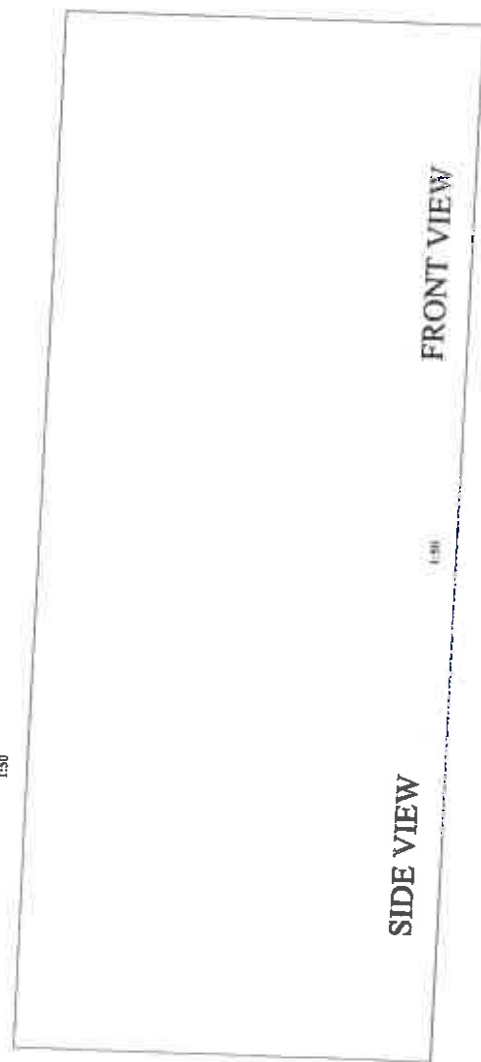
NOTES:

PROJECT:

DATE:

FISHOF 1092 T/A
2001.0651320.213

10/27/2011



SIDE VIEW

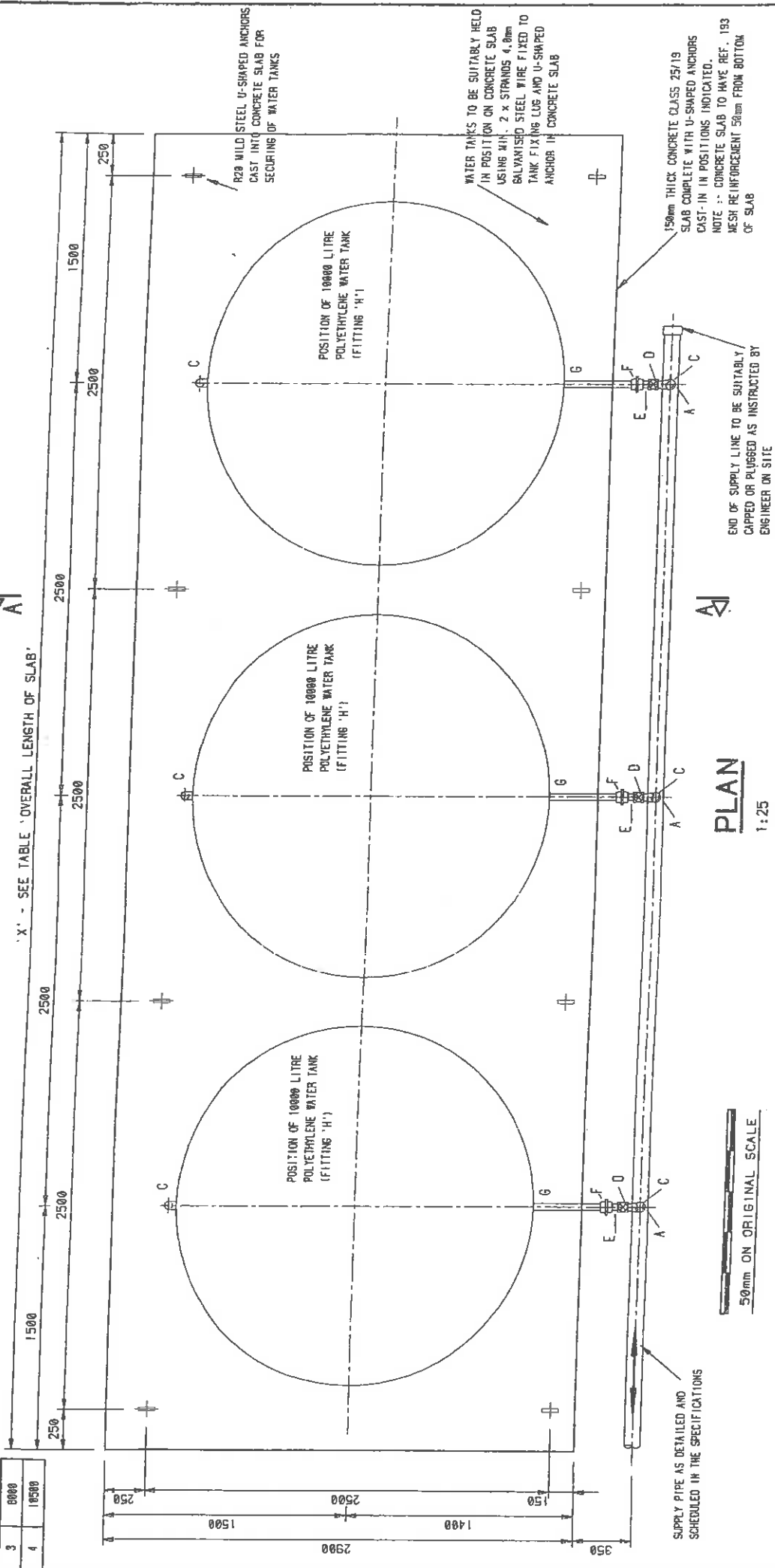
106-71

3. WATER TANKS

OVERALL LENGTH OF SLAB

No. OF DIMENSION	TANKS	'X' (m)
1	3000	
2	5500	
3	8000	
4	19500	

'X' - SEE TABLE 'OVERALL LENGTH OF SLAB'



REPUBLIC OF SOUTH AFRICA DEPARTMENT OF WATER AFFAIRS AND FORESTRY DIRECTOR GENERAL: M. MULLER		TYPE DRAWING NON-ELEVATED TANK : PLAN		PROVINCE : NORTHERN DISTRICT : LOCALITY No.: ZZZZ-04	
DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING		TECHNICAL DESIGN SERVICES		DATE: 17/3/99	
ENGINEER:		DESIGNED: EKSTEEN, V.D. WALT & NISSEN		KEY CODES	
CHIEF ENGINEER (P-Eng)		DRAWN: EKSTEEN, V.D. WALT & NISSEN		Typ	
DIRECTOR (P-Eng)		CHECKED: EKSTEEN, V.D. WALT & NISSEN		RES	
TENDER No. /		CALCULATIONS FILE:		DET	
ALL DIMENSIONS IN MILLIMETRES		DO NOT SCALE DRAWING		CONTRACT No.	
NO. DATE		REVISIONS		OTHER NO. 9522.13.10W	
1		1		SHEET 13 OF	
2		2		REG. No. 125 819/97ME	

GENERAL NOTES :

3) IN-SITU MATERIAL BELOW SLAB TO BE COMPACTED TO 90% MOD. AASHTO AT OPTIMUM MOISTURE CONTENT AFTER EXCAVATION FOR CONCRETE SLAB.

2) TANK ANCHOR WIRES TO BE SUITABLY TENSIONED PRIOR TO INITIAL FILLING OF TANKS.

U-SHAPED ANCHOR DETAIL

1



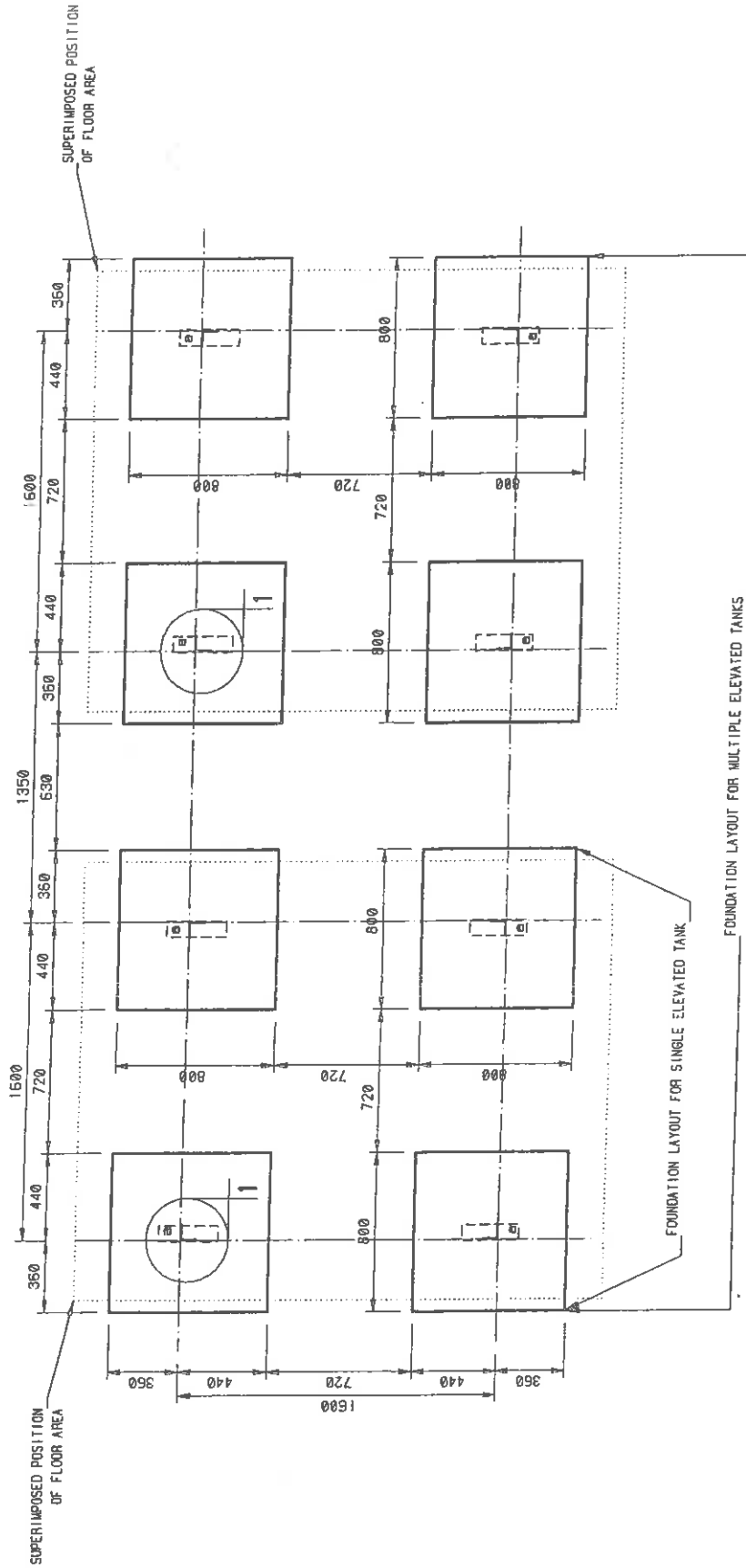
1:25

50mm ON ORIGINAL SCALE

NOTE: 1 x ANCHORS REQUIRED FOR THE INSTALLATION OF THE FIRST TANK, AND THEREAFTER AN ADDITIONAL 2 x ANCHORS REQUIRED FOR EACH ADDITIONAL TANK

[illegible]

NOTE :
FOR FOOTINGS IN SANDY CONDITIONS
REFER TO DETAIL ON TYPE DRAWING
No. 125 824/97ME.

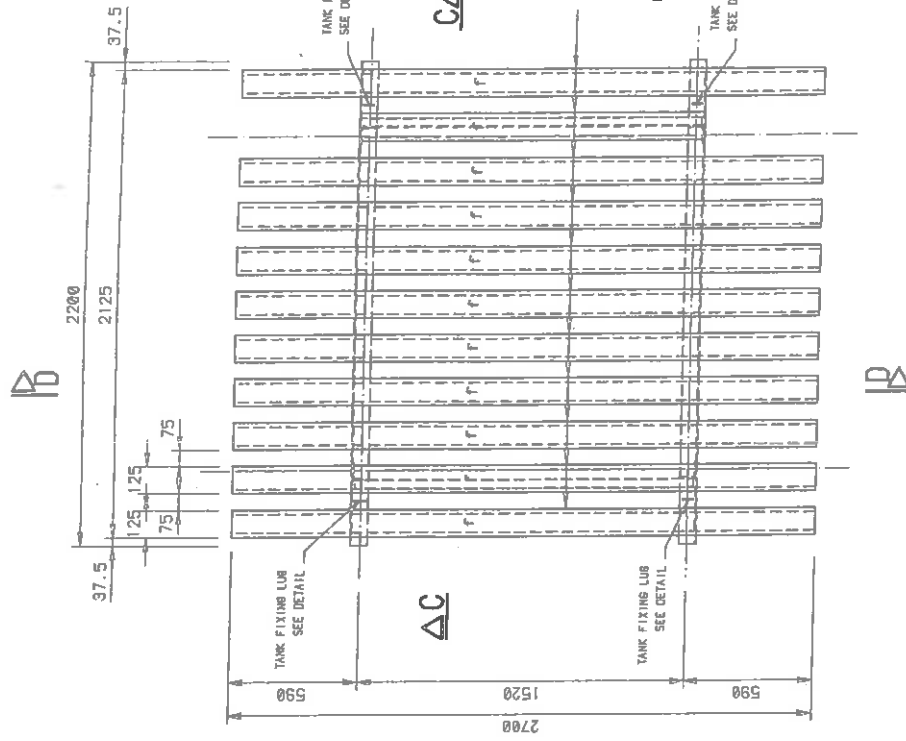


FOUNDATION LAYOUT:

1.25

50mm ON ORIGINAL SCALE

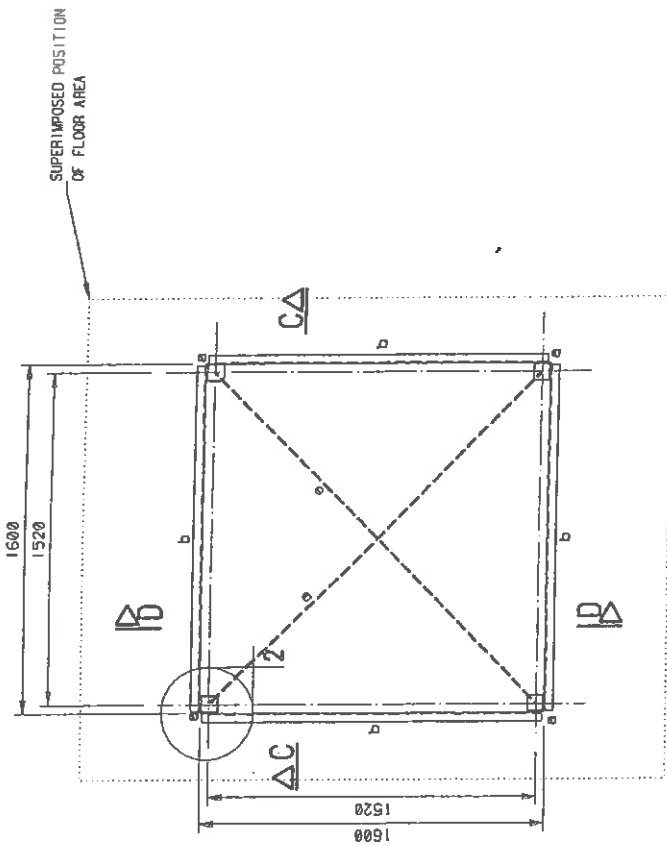
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FLOOR LAYOUT

1:25

50mm ON ORIGINAL SCALE

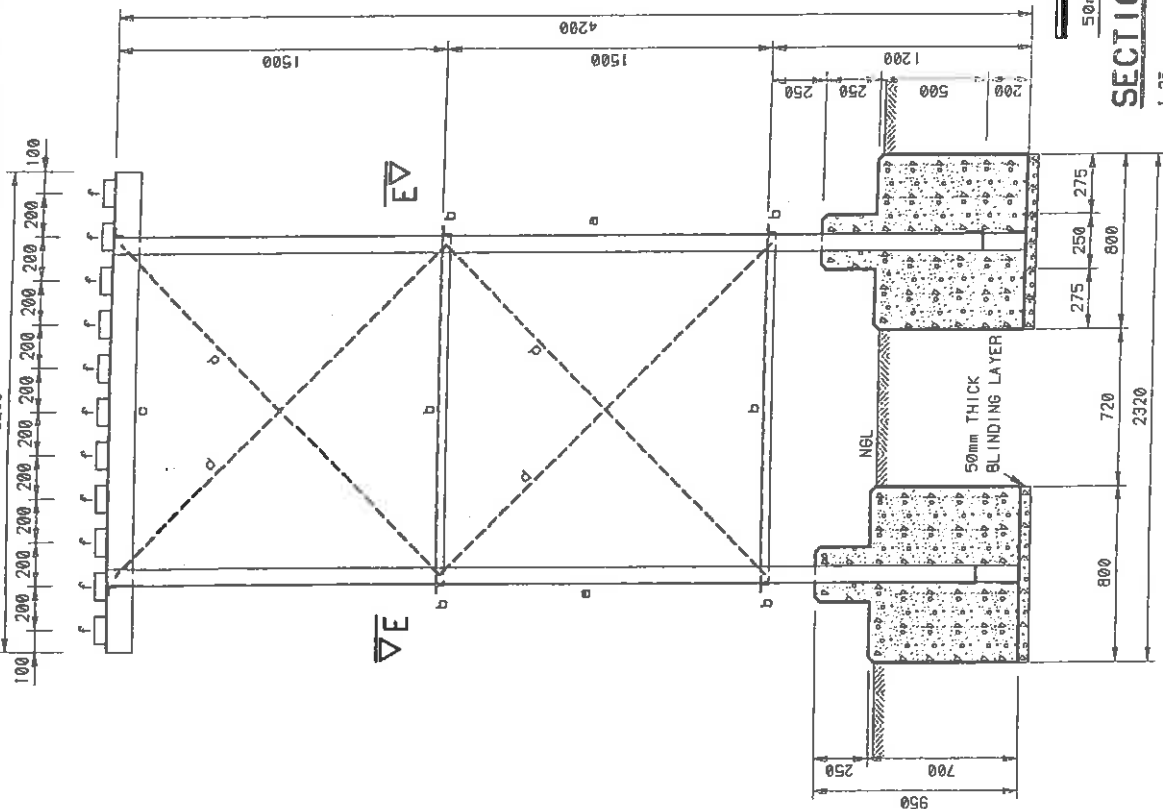


LAYOUT PLAN E-E

1:25

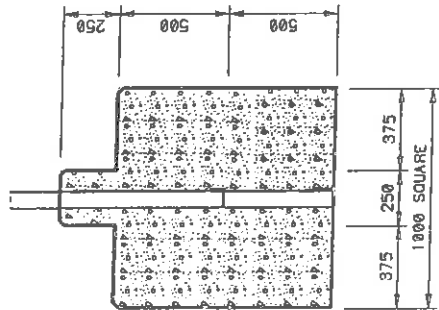
NO		DATE		REVISIONS	
DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING TECHNICAL DESIGN SERVICES ENGINEER: <i>[Signature]</i> DESIGNED: EKSTEEN, V.D. WALT & NISSEN CHIEF ENGINEER: <i>[Signature]</i> DRAWN: EKSTEEN, V.D. WALT & NISSEN DIRECTOR: <i>[Signature]</i> 17/3/99 CHECKED: EKSTEEN, V.D. WALT & NISSEN TENDER No. 1 CALCULATIONS FILE:					
ALL DIMENSIONS IN MILLIMETRES DO NOT SCALE DRAWING					
TYPE DRAWING ELEVATED TANK STAND: PLAN & FLOOR LAYOUT PROVINCE: NORTHERN DISTRICT: LOCALITY No.: ZZZZ-04 OTHER No. 9522.13.14W 5 SHEET OF 13 REG. No. 125 823/97ME					

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER



SECTION C-C

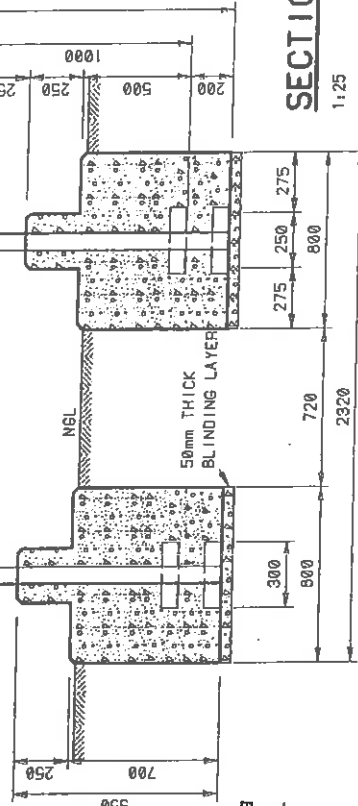
50mm ON ORIGINAL SCALE



FOOTING DETAIL FOR
SANDY CONDITIONS

1:25

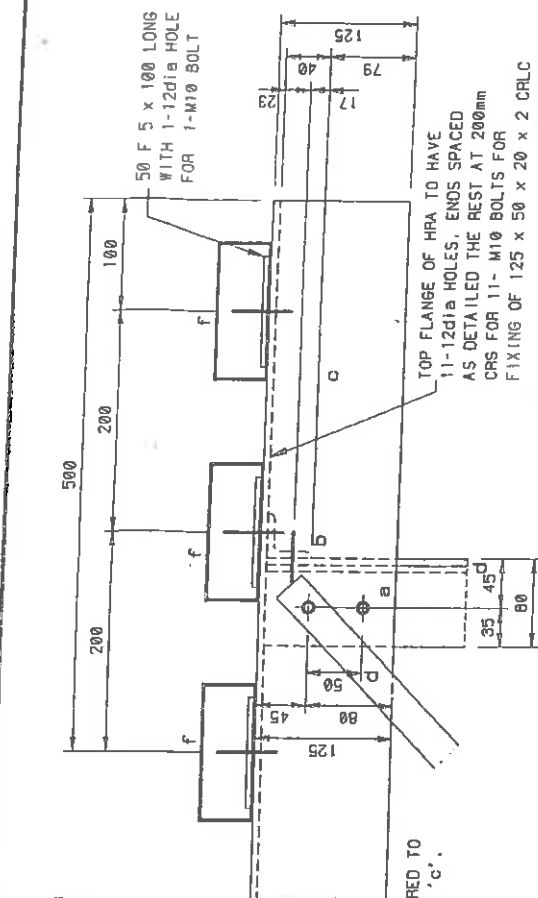
NOTE :
TANK STAND COLUMNS TO
REST ON TOP OF BLINDING
LAYER BEFORE THE FOOTINGS
IS CASTED.



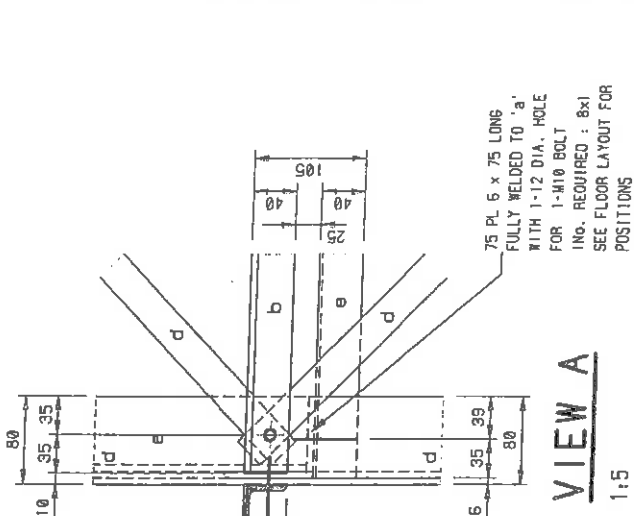
SECTION D-D

1.25

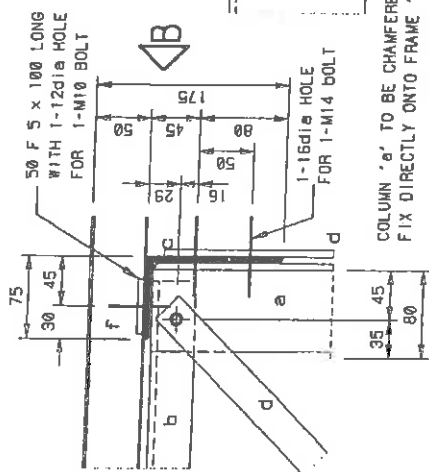
NO	DATE	REVISIONS	DIRECTORATE MECHANICAL & ELECTRICAL ENGINEERING		REPUBLIC OF SOUTH AFRICA DEPARTMENT OF WATER AFFAIRS AND FORESTRY	
1	99-01	FOUNDATIONS AMENDED - A. NEL			DIRECTOR GENERAL: M. MULLER	
			TECHNICAL DESIGN SERVICES	DESIGNED: EKSTEEN, V.D. WALT & NISSEN	TYPE DRAWING	
			ENGINEER :	DATE: 17/3/99	ELEVATED TANK STAND : SECTIONS	
			CHIEF ENGINEER (Pr. Eng)	DRAWN : 17/3/99	PROVINCE : NORTHERN DISTRICT :	
			DIRECTOR (Pr. Eng)	CHECKED: EKSTEEN, V.D. WALT & NISSEN	LOCALITY No.: 2222-04	
			TENDER No. /	CALCULATIONS FILE:	OTHER No. 9522.13.15W 6 SHEET 13	
ALL DIMENSIONS IN MILLIMETRES			DO NOT SCALE DRAWING			REG. No. 125 824/97ME R1



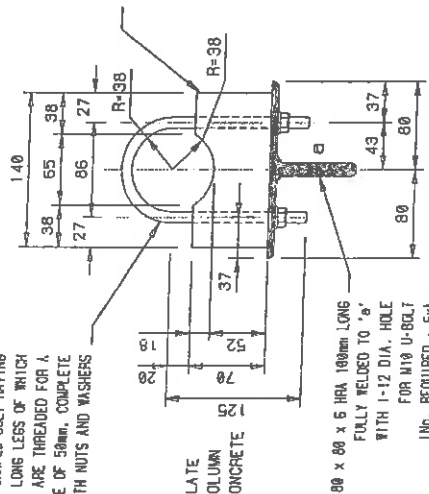
VIEW B



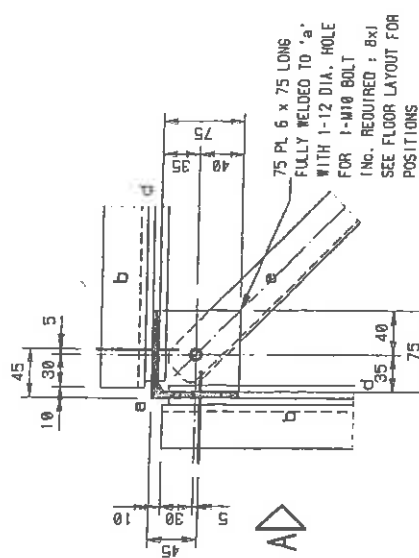
VIEW A



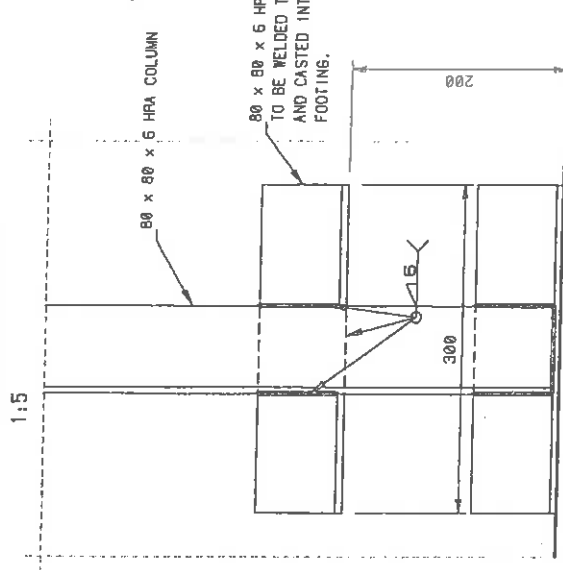
DETAIL 3



PIPE CLAMP DETAIL (6 OFF REQUIRED)

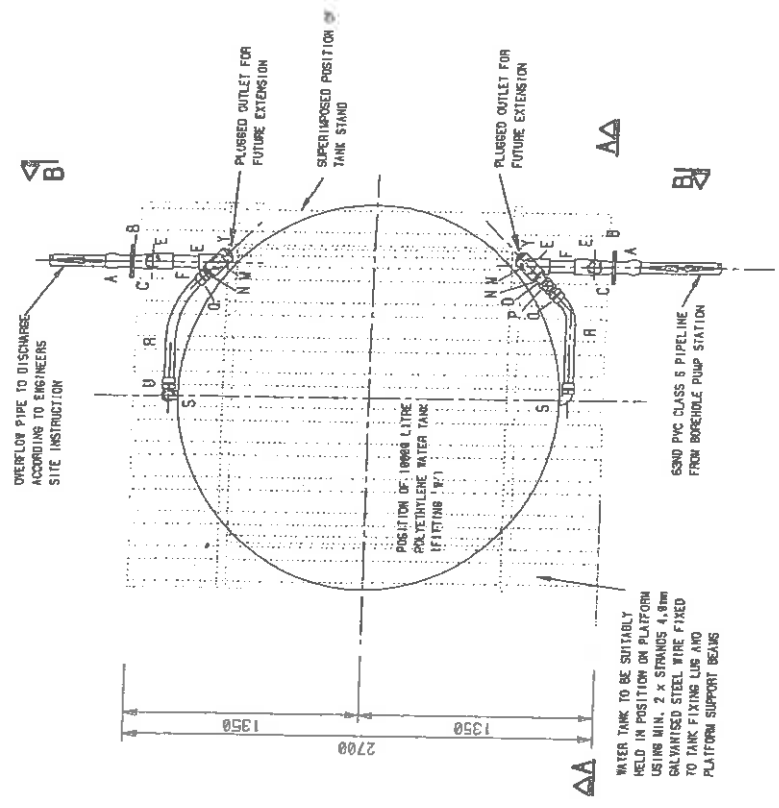
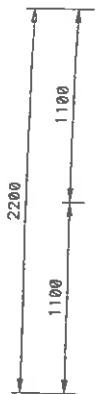


DETAIL 2



BASE PLATE DETAIL 1

[illegible]



PLAN N.T.S.

NOTE ALL FLANGES TO BE DRILLED ACCORDING TO SABS 1123-1977 TABLE 11
1 STEEL SCORED BOSS FLANGES - 1000/41 AND REFERRED TO AS
SABS 11 IN THE SCHEDULE OF FITTINGS

50mm ON ORIGINAL SCALE

SCHEDULE OF FITTINGS

REF	NO	DESCRIPTION	WALL 'L'	FLANGE DRILLING	TREATMENT GALVA- NISED RESIN PAINT	QTY
A	63	PVC FLANGE ADAPTOR (CAST IRON)	-	SABS 11	-	2no
B	65	GALVANISED STEEL SCORED ON FLANGE	-	SABS 11	-	2no
C	65	90 DEGREE M61 MALE/FEMALE BEND	-	-	-	2no
D	65	475mm LONG M61 PIPE PIECE THREADED BOTH ENDS	-	-	-	2no
E	65	90 DEGREE M61 FEMALE BEND	-	-	-	4no
F	65	320mm LONG M61 PIPE PIECE THREADED BOTH ENDS	-	-	-	2no
G	65	1920mm LONG M61 PIPE PIECE THREADED BOTH ENDS	-	-	-	1no
H	65	M61 CORICAL SEAT UNION	-	-	-	1no
J	65	M61 BARREL NIPPLE	-	-	-	1no
K	65	BRASS FEMALE THREADED FULLWAY GATE VALVE	-	-	-	1no
L	65	2400mm LONG M61 PIPE PIECE THREADED BOTH ENDS	-	-	-	1no
M	65	65x65x50 M61 FEMALE EQUAL TEE	-	-	-	1no
N	65-50	65x50 M61 REDUCING BUSH	-	-	-	2no
O	50	M61 BARREL NIPPLE	-	-	-	1no
P	50	BRASS FEMALE THREADED FULLWAY GATE VALVE	-	-	-	1no
Q	50	50x50 M61 MALE ADAPTOR COMPRESSION FITTING	-	-	-	1no
R	50	600mm LONG HIGH DENSITY POLYETHYLENE TYPE IV CLASS 6 PIPE (TO SABS 333)	-	-	-	2no
S	50x40	50x40 M61 MALE ELBOW COMPRESSION FITTING	-	-	-	2no
T	50	2800mm LONG HIGH DENSITY POLYETHYLENE TYPE IV CLASS 6 PIPE (TO SABS 333)	-	-	-	2no
U	50	90 DEGREE ELBOW COMPRESSION FITTING	-	-	-	1no
V	65	3150mm LONG M61 PIPE PIECE THREADED BOTH ENDS	-	-	-	1no
W	65	10 000 LITRE POLYETHYLENE WATER TANK 1250mm HIGH x 2200mm DIAMETER. COMPLETE WITH 50x40MM NYLON REDUCING BUSHES SEALED INTO ALL INLETS AND OUTLETS. INCLUDING A 400 M61 PLUG FITTED TO OPENING ABOVE INLET. TANK TO BE SUPPLIED COMPLETE WITH SUFFICIENT 4mm DIA GALVANISED STEEL WIRE FOR ANCHORING TO THE TANKSTAND PLATFORM AS DETAILED ON PLAN NO. 125 825/97ME	-	-	-	1set
X	63	PVC CLASS 5 PIPING	-	-	-	12m
Y	65	M61 HOLLOW PLUG	-	-	-	2no
		MISCELLANEOUS FITTINGS	-	-	-	1no
		1) PIPE CLAMPS AS DETAILED ON PLAN NO. 125 825/97ME	-	-	-	5no

DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING

TECHNICAL DESIGN SERVICES	DESIGNED: EKSTEEN, V.D. WALT & NISSEN	KEY CODES
ENGINEER:	DRAWN: EKSTEEN, V.D. WALT & NISSEN	TYP
CHIEF ENGINEER (Pr-Eng)	CHECKED: EKSTEEN, V.D. WALT & NISSEN	860
DIRECTOR (Pr-Eng)	CALCULATIONS FILE:	RES
TENDER No. 1	CONTRACT No.	450

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER

TYPE DRAWING
ELEVATED TANK : PLAN (SINGLE TANK)

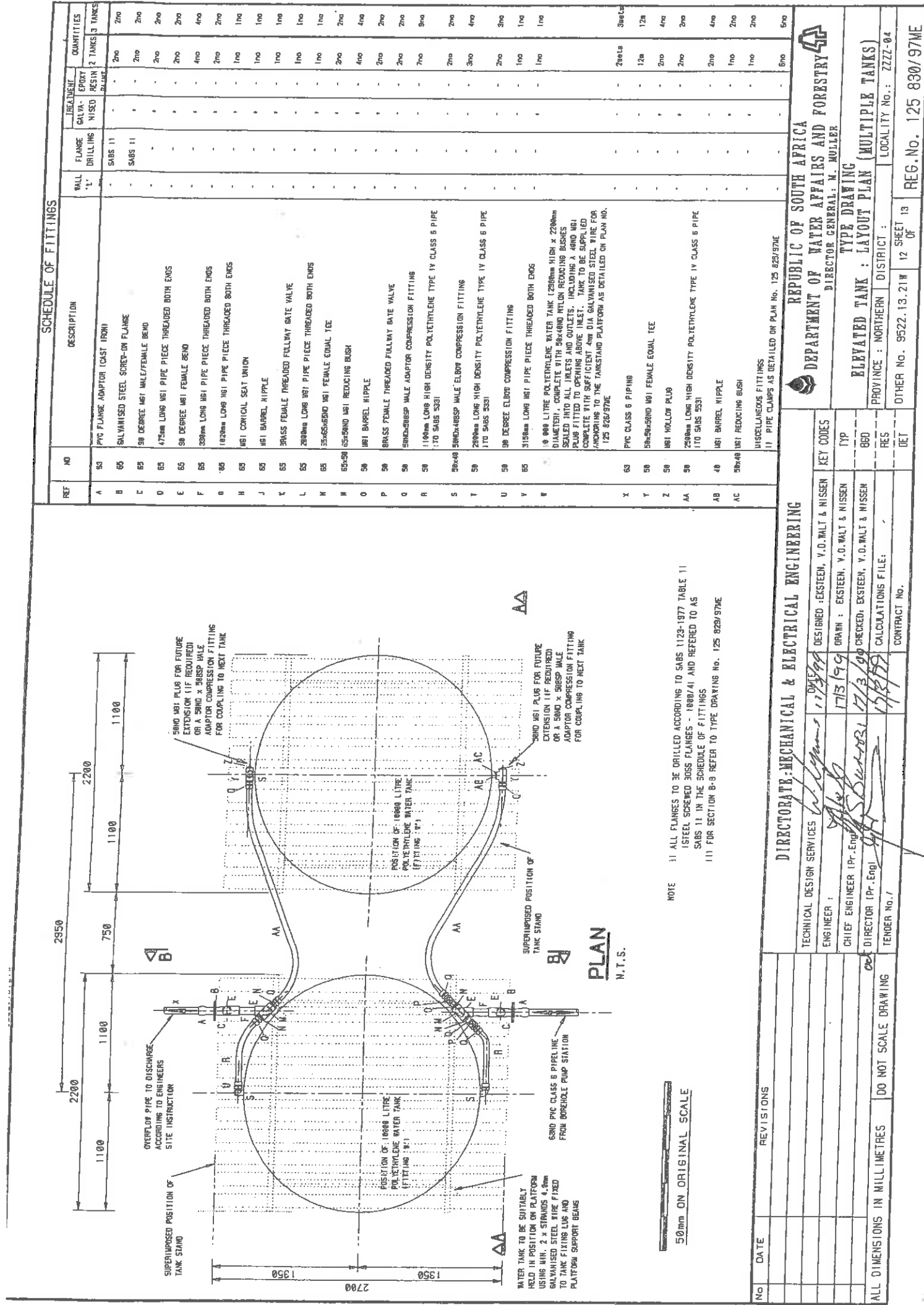
PROVINCE : NORTHERN DISTRICT : LOCALITY No.: ZZZZ-94

OTHER No. 9522.13.18W 9 SHEET 13 OF

REG. No. 125 827/97ME

NO	DATE	REVISIONS

ALL DIMENSIONS IN MILLIMETRES DO NOT SCALE DRAWING



SCHEDULE OF FITTINGS

REF	NO	DESCRIPTION	WALL THICKNESS	FLANGE DRILLING	QUANTITY
A	50	PVC FLANGE ADAPTOR (OAST IRON)	-	SABS 11	2no
B	50	GALVANISED STEEL SCREW-ON FLANGE	-	SABS 11	2no
C	50	50 DEGREE M61 MALE/FEMALE BEND	-	-	2no
D	50	475mm LONG M61 PIPE PIECE THREADED BOTH ENDS	-	-	2no
E	50	50 DEGREE M61 FEMALE BEND	-	-	2no
F	50	320mm LONG M61 PIPE PIECE THREADED BOTH ENDS	-	-	2no
G	50	162mm LONG M61 PIPE PIECE THREADED BOTH ENDS	-	-	2no
H	50	M61 CONICAL SEAT UNION	-	-	1no
I	50	M61 BARREL NIPPLE	-	-	1no
J	50	BRASS FEMALE THREADED FULLWAY GATE VALVE	-	-	1no
K	50	200mm LONG M61 PIPE PIECE THREADED BOTH ENDS	-	-	1no
L	50	35x55x50 M61 FEMALE EQUAL TEE	-	-	1no
M	50	35x55x50 M61 REDUCING BUSH	-	-	1no
N	50	35x55x50 M61 REDUCING BUSH	-	-	1no
O	50	M61 BARREL NIPPLE	-	-	1no
P	50	BRASS FEMALE THREADED FULLWAY GATE VALVE	-	-	1no
Q	50	50x50x50 M61 ADAPTOR COMPRESSION FITTING	-	-	1no
R	50	110mm LONG HIGH DENSITY POLYETHYLENE TYPE IV CLASS 6 PIPE	-	-	1no
S	50	50x50x50 M61 ELBOW COMPRESSION FITTING	-	-	1no
T	50	200mm LONG HIGH DENSITY POLYETHYLENE TYPE IV CLASS 6 PIPE	-	-	1no
U	50	50 DEGREE ELBOW COMPRESSION FITTING	-	-	1no
V	50	315mm LONG M61 PIPE PIECE THREADED BOTH ENDS	-	-	1no
W	50	10 000 LITRE POLYETHYLENE WATER TANK (2000mm HIGH x 2200mm DIAMETER), COMPLETE WITH 50x50mm WELON REDUCING BUSHES SEALED INTO ALL INLETS AND OUTLETS, INCLUDING A 4000 M61 PLUG FITTED TO OPENING ABOVE INLET. TANK TO BE SUPPLIED COMPLETE WITH SUFFICIENT 4mm DIA GALVANISED STEEL WIRE FOR ANCHORING TO THE TANKSTAND PLATFORM AS DETAILED ON PLAN NO. 125 826/97ME	-	-	1no
X	60	PVC CLASS 6 PIPING	-	-	2m
Y	50	50x50x50 M61 FEMALE EQUAL TEE	-	-	1no
Z	50	M61 WELON PLUG	-	-	1no
AA	50	250mm LONG HIGH DENSITY POLYETHYLENE TYPE IV CLASS 6 PIPE	-	-	1no
AB	40	M61 BARREL NIPPLE	-	-	1no
AC	50x40	M61 REDUCING BUSH	-	-	1no
AD	50x40	UNUSUAL FITTINGS	-	-	1no

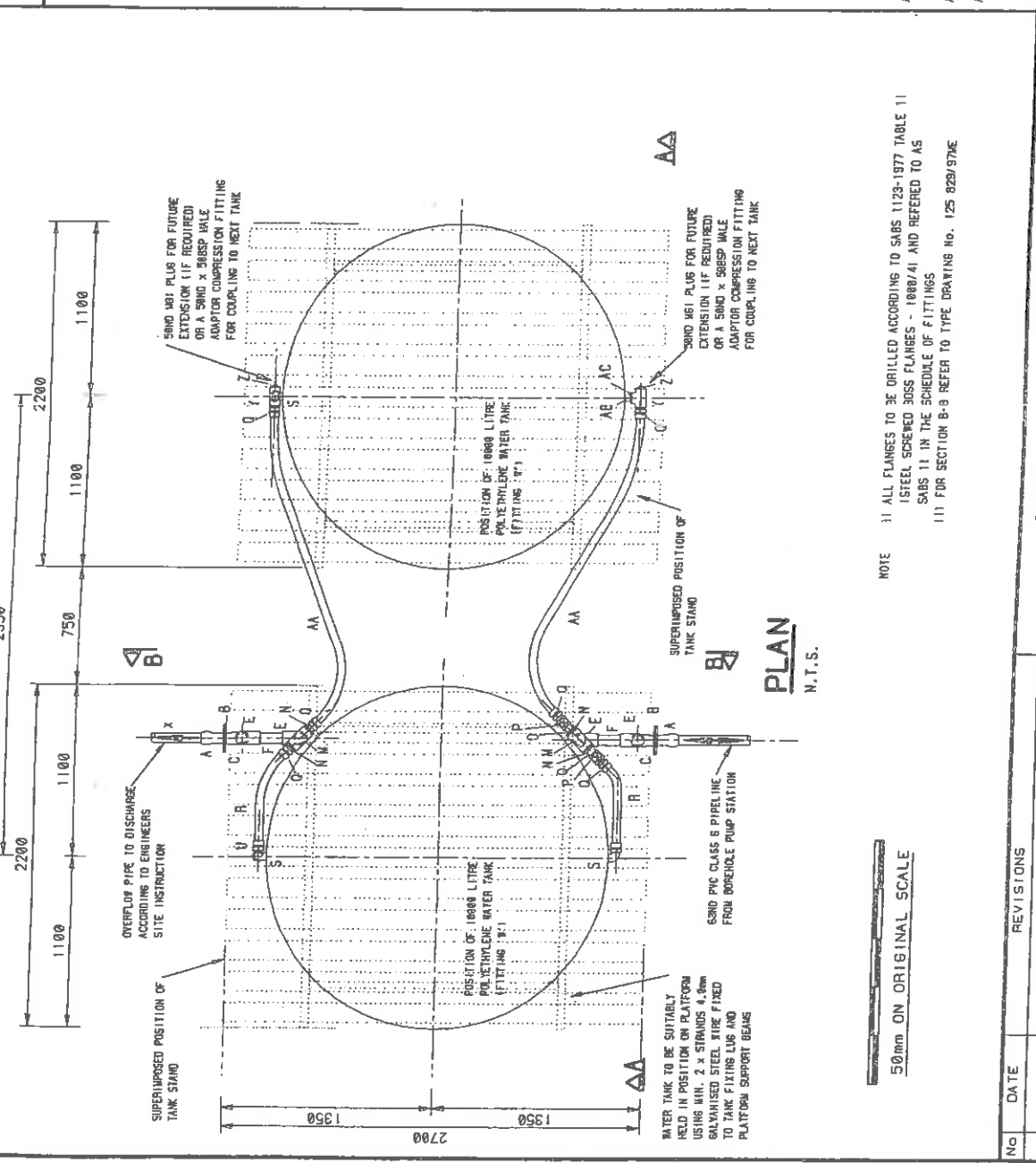
REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER

ELEVATED TANK : TYPE DRAWING
LAYOUT PLAN (MULTIPLE TANKS)

PROVINCE : NORTHERN DISTRICT :
LOCALITY No.: ZZZZ-04

OTHER No. 9522.13.21W 12 SHEET 13 OF
REG.No. 125 830/97ME

PLAN



DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING

TECHNICAL DESIGN SERVICES DESIGNED: EKSTEEN, V.D. WALT & NISSEN
ENGINEER :
CHIEF ENGINEER (PR-ENG) :
DIRECTOR (PR-ENG) :
TENDER No. /

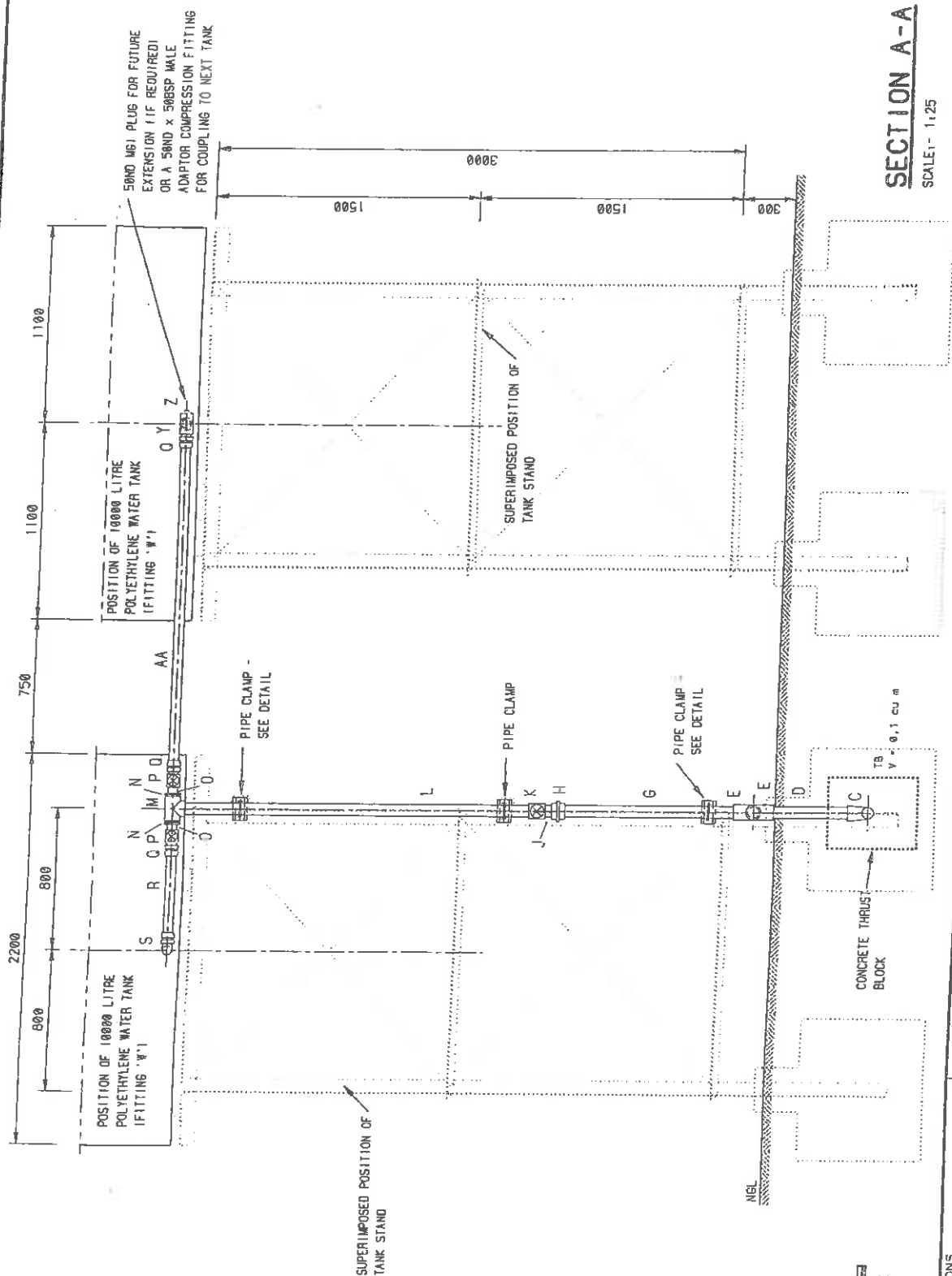
17/5/99
17/3/00
17/3/99

DO NOT SCALE DRAWING
ALL DIMENSIONS IN MILLIMETRES

REVISIONS
DATE
REVISIONS

NOTE
1) ALL FLANGES TO BE DRILLED ACCORDING TO SABS 1123-1977 TABLE 11
2) STEEL SCREWED 30SS FLANGES - 1980/41 AND REFERRED TO AS
SABS 11 IN THE SCHEDULE OF FITTINGS
3) FOR SECTION B-3 REFER TO TYPE DRAWING NO. 125 826/97ME

50mm ON ORIGINAL SCALE



SECTION A-A

SCALE: 1:25

DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING

TECHNICAL DESIGN SERVICES	DESIGNED: EKSTEEN, V.D. WALT & NISSEN	KEY CODES
ENGINEER: <i>Eksteen</i>	DRAWN: EKSTEEN, V.D. WALT & NISSEN	TYPE
CHIEF ENGINEER (Pr-Eng): <i>Eksteen</i>	CHECKED: EKSTEEN, V.D. WALT & NISSEN	860
DIRECTOR (Pr-Eng): <i>Eksteen</i>	CALCULATIONS FILE:	NAN
TENDER No. /	CONTRACT No.	DET

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER

TYPE DRAWING
ELEVATED TANK: SECTION (MULTIPLE TANKS)

PROVINCE: NORTHERN DISTRICT: LOCALITY No.: ZZZZ-04
OTHER No. 9522.13.22W 13 SHEET 13 OF REG. No. 125 831/97ME

No	DATE	REVISIONS
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ALL DIMENSIONS IN MILLIMETRES DO NOT SCALE DRAWING

4. RESERVOIR RELATED DETAILS

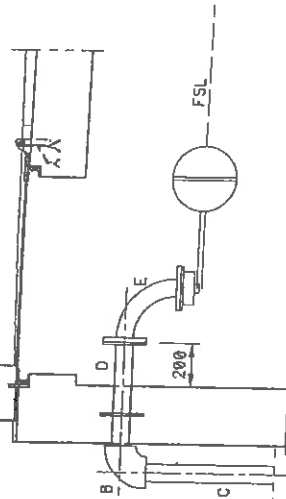
NOTES

1) ALL PIPE FITTINGS TO BE EPOXY RESIN COATED
2) ALL FLANGES TO BE DRILLED ACCORDING TO 8S 4504 TABLE 10

[illegible]

[illegible]

900mm x 500mm WIDE
FABRICATED MANHOLE COVER
AS DETAILED ON DRAWING
NO: 125 811/97ME



FLANGE DRILLING	STATIC (CLOSED VALVE) DIFFERENTIAL kPa MAX.	WORKING RANGE		
		MAX. kPa	MIN. kPa	DYNAMIC (OPEN VALVE) FULL FLOW DIFFERENTIAL
SABS 1123/16	1600	100	100	28
SABS 1123/16	1600	500	50	50
SABS 1123/25	2500	1000	100	100

MAXIMUM WORKING TEMPERATURE : 80 DEGREES CENTIGRADE

FLOAT VALVE

50mm ON ORIGINAL SCALE

SCHEDULE OF FITTINGS				
REF	NO	DESCRIPTION	TREAT- MENT	QTY
A	*	GALVANISED BARREL NIPPLE	G	1no
B	*	90 DEGREE GALVANISED FEMALE ELBOW	G	2no
C	*	500mm LONG M61 PIPE THREADED BOTH ENDS (EXACT LENGTH TO BE DETERMINED ON SITE)	G	1no
D	*	500mm LONG GALVANISED STEEL PIPE THREADED BOTH ENDS, WITH 1 x SCREW-ON FLANGE ON ONE END AND HAVING A PUDDLE FLANGE 125mm FROM OTHER END (FLANGE TO BE DRILLED EITHER SABS 1123 TABLE 16 OR 25, TO SUITE FITTING 'E')	G	1set
E	*	FLOAT VALVE WITH FLANGE DRILLED ACCORDING TO TABLE ABOVE	-	1no
F	*	GALVANISED FLANGE THREADED	G	1no

* - AS SPECIFIED IN SCHEDULE OF QUANTITIES

No		DATE		REVISIONS	
DIRECTORATE MECHANICAL & ELECTRICAL ENGINEERING					
TECHNICAL DESIGN SERVICES		DATE		KEY CODES	
ENGINEER : <i>[Signature]</i>		17/3/99		DESIGNED : EKSTEEN, V.D. WALT & NISSEN	
CHIEF ENGINEER (Pr. Eng) <i>[Signature]</i>		17/3/99		DRAWN : EKSTEEN, V.D. WALT & NISSEN	
DIRECTOR (Pr. Eng) <i>[Signature]</i>		17/3/99		CHECKED : EKSTEEN, V.D. WALT & NISSEN	
TENDER No. /		CALCULATIONS FILE :		RES	
DO NOT SCALE DRAWING		CONTRACT No.		ASD	
ALL DIMENSIONS IN MILLIMETRES		OTHER No. 9522.13.25W		DISTRICT :	
		4 SHEET OF		LOCALITY No. : ZZZZ-04	
		REG. No. 125 835/97ME			

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER
RESERVOIR : TOP INLET DETAILS USING A FLOAT
CONTROL VALVE

5. PIPELINE AND GENERAL RELATED DETAILS



PIPE FITTING SCHEDULE

NOTES:

1. ALL EXPOSED CONCRETE EDGES TO RECEIVE 20mm CHAMFER.
2. ALL EXPOSED CONCRETE SURFACES TO RECEIVE SPECIAL SMOOTH, REPAIRED AND RUBBED SURFACE FINISH.

50mm ON ORIGINAL SCALE

NO	DATE	REVISIONS	DO NOT SCALE DRAWING
DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING			
TECHNICAL DESIGN SERVICES		DATE	DESIGNED - EKSTEEN, Y.D. WALT & NISSEN
ENGINEER :	<i>W.D. Walt</i>	17/3/99	DRAWN : EKSTEEN, Y.D. WALT & NISSEN
CHIEF ENGINEER (Pr-Eng)	<i>W.D. Walt</i>	17/3/99	CHECKED: EKSTEEN, Y.D. WALT & NISSEN
DIRECTOR (Pr-Eng)	<i>W.D. Walt</i>	17/3/99	CALCULATIONS FILE:
TENDER No. /			CONTRACT No.
ALL DIMENSIONS IN MILLIMETRES	DO NOT SCALE DRAWING		

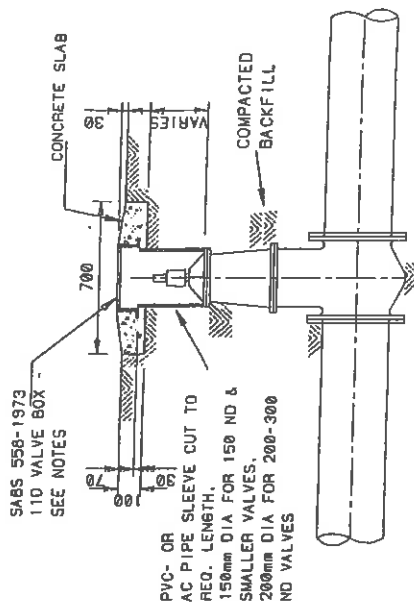
REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER

ON GENERAL; M. E. TYPE DRAFTING

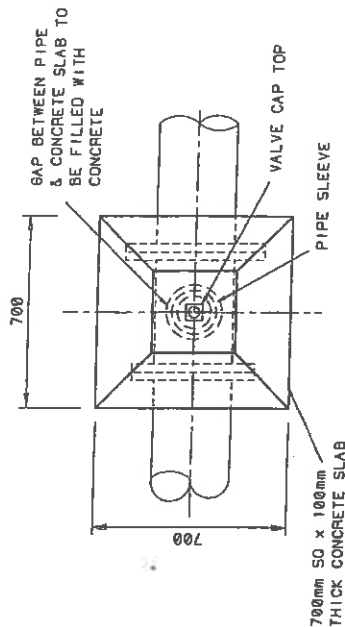
DOMESTIC DRAW-OFF WITH DOUBLE OUTLET

PROVINCE : NORTHERN	DISTRICT :	LOCALITY No.: ZZZZ-04
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OTHER No. 9522.13.28W	2 SHEET 10 OF	REG.No. 125 837/97ME
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SECTION



PLAN

VALVE BOX FOR 50-300ND FLANGED PIPEWORK

NOTE

1. CONCRETE CLASS 20/19
2. VALVE BOX ALTERNATIVE : THERMOPLASTIC AS SUPPLIED BY DAVIS AND DEALE (GERMISTON), RECTANGULAR BOX 430mm x 300mm
3. VALVE BOX LID TO BE PAINTED (OR COLOURED) GOLDEN YELLOW ACCORDING TO SABS 1091, COLOUR B49 (CKS 279, COLOUR D26)

50mm ON ORIGINAL SCALE

REVISIONS

NO DATE

ALL DIMENSIONS IN MILLIMETRES

DO NOT SCALE DRAWING

TENDER No. 1

TECHNICAL DESIGN SERVICES

ENGINEER :

CHIEF ENGINEER (Pr. Eng)

DIRECTOR (Pr. Eng)

DATE

DESIGNED : EKSTEEN, V.D. MALT & NISSEN

DRAWN : EKSTEEN, V.D. MALT & NISSEN

CHECKED : EKSTEEN, V.D. MALT & NISSEN

CALCULATIONS FILE :

CONTRACT No.

KEY CODES

TYP

860

VAL

ASD

OTHER No. 9522.13.25W

3 SHEET

OF

REG. No. 125 838/97ME

LOCALITY No. : ZZZZ-04

DISTRICT :

PROVINCE : NORTHERN

TYPE DRAWING

VALVE BOX FOR LINE VALVES 300ND AND SMALLER

DIRECTOR GENERAL : M. MULLER

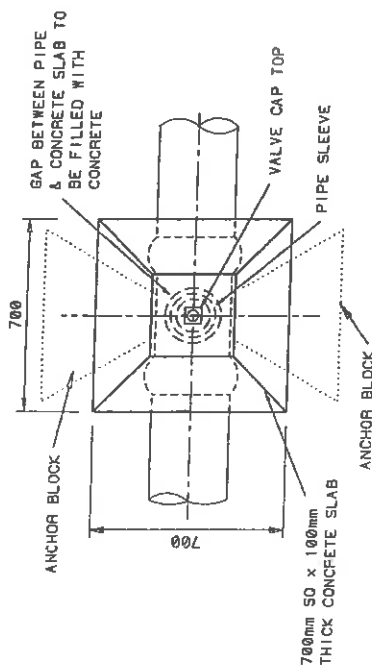
DEPARTMENT OF WATER AFFAIRS AND FORESTRY

REPUBLIC OF SOUTH AFRICA

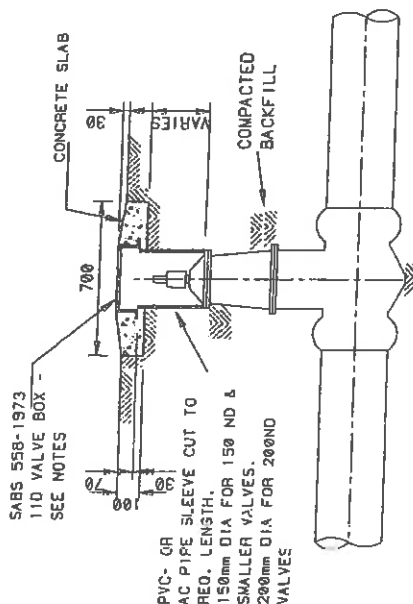
VALVE BOX FOR 50-300ND FIBRE CEMENT PIPEWORK

VALVE BOX FOR 50-300ND PVC PIPEWORK

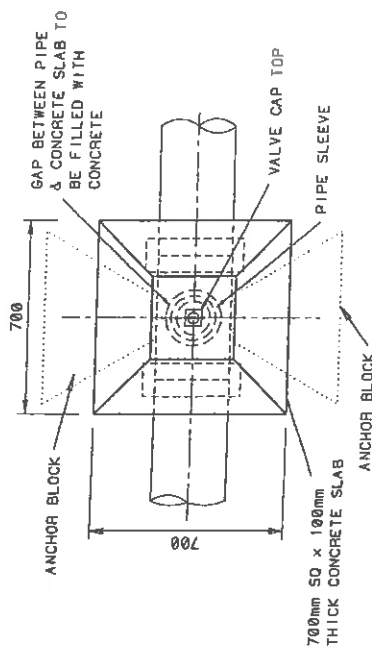
PLAN



SECTION



SECTION

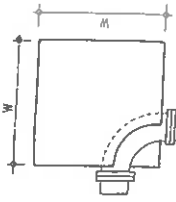


PLAN

VALVE BOX FOR 50-300ND FIBRE CEMENT PIPEWORK

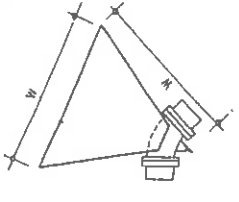
REPUBLIC OF SOUTH AFRICA DEPARTMENT OF WATER AFFAIRS AND FORESTRY DIRECTOR GENERAL : M. MULLER	
TYPE DRAWING VALVE BOX FOR LINE VALVES 300ND AND SMALLER	
PROVINCE : NORTHERN	DISTRICT :
LOCALITY No. : ZZZZ-04	OTHER No. 9522.13.25W
3 SHEET	OF
REG. No. 125 838/97ME	

90° BEND AND END CAP



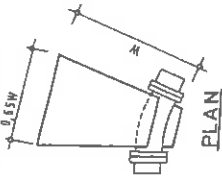
PLAN

45° BEND AND T-PIECE

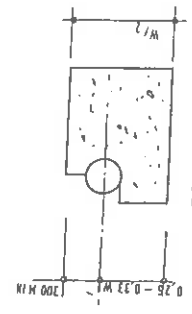


PLAN

22.5° BEND

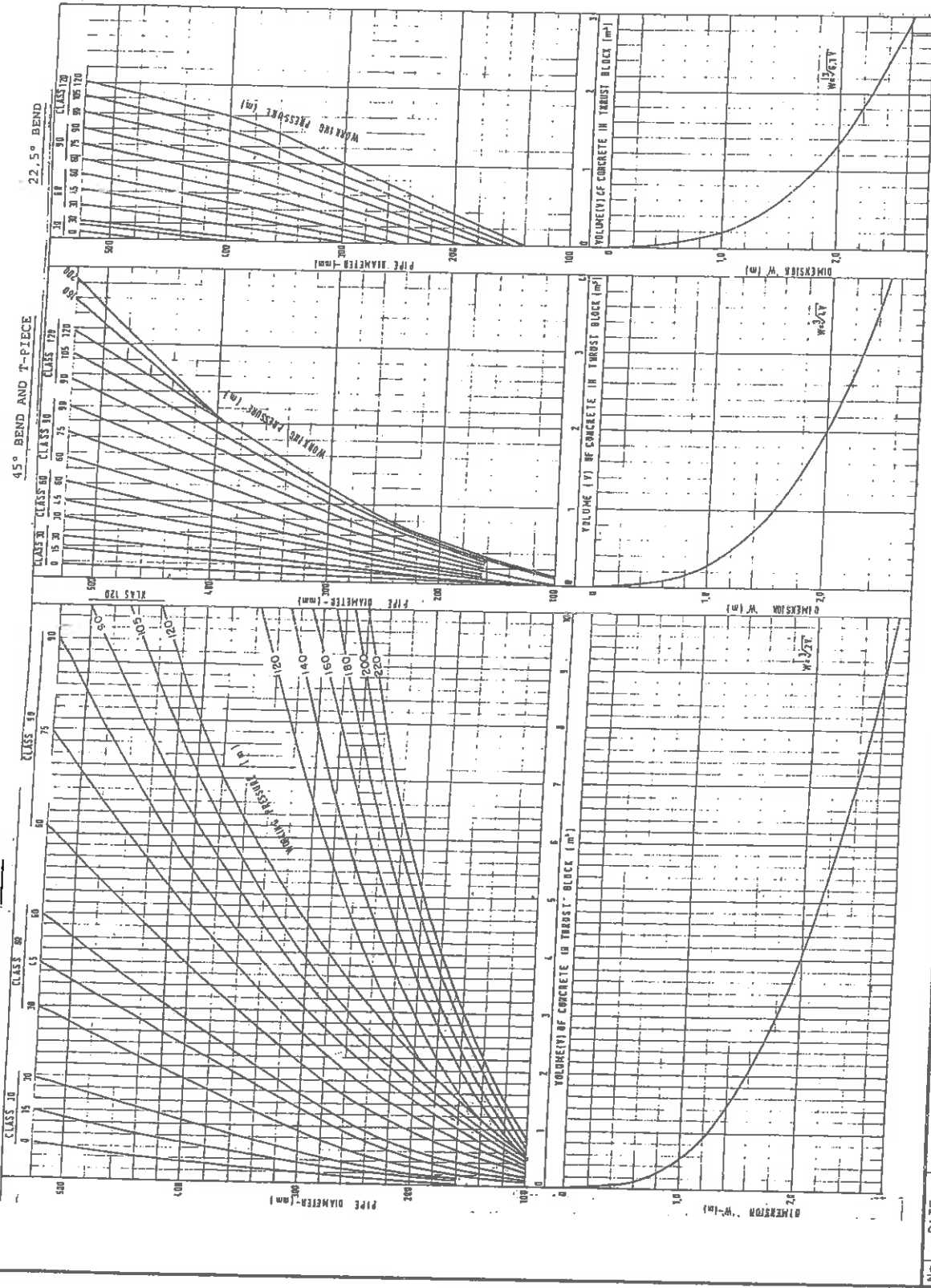


PLAN



SECTION

TEST PRESSURE - WORKING PRESSURE - 50% OF CLASS PRESSURE
CONCRETE CLASS 30/19



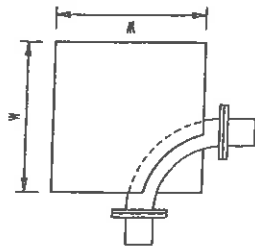
DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING

TECHNICAL DESIGN SERVICES	DESIGNED: EKSTEEN, V.D. WALT & NISSEN	KEY CODES
ENGINEER:	17/3/99	TYP
CHIEF ENGINEER (Pr. Eng)	17/3/99	B6D
DIRECTOR (Pr. Eng)	17/3/99	TBC
TENDER No. 1	7317	DET
ALL DIMENSIONS IN MILLIMETRES	DO NOT SCALE DRAWING	

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER

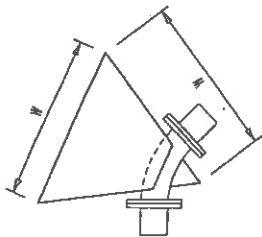
CONCRETE THRUST BLOCK : DIAGRAM
PROVINCE : NORTHERN DISTRICT : LOCALITY No.: 2222-04
OTHER No. 9522.13.30W 4 SHEET 18 OF REG. No. 125 839/97ME

90 deg. BEND
& END CAP



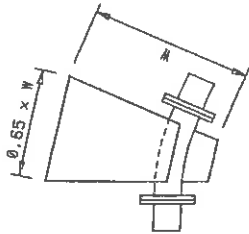
PLAN

45 deg. BEND
& T-PIECE



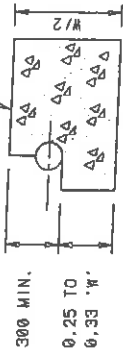
PLAN

22.5 deg. BEND



PLAN

CONCRETE CLASS 20/19



SECTION

TYPICAL DESCRIPTION

Thb 2.6/1.7 HAVING V = 2.6 cu. m CONCRETE AND 'W' = 1.7m

NOTE

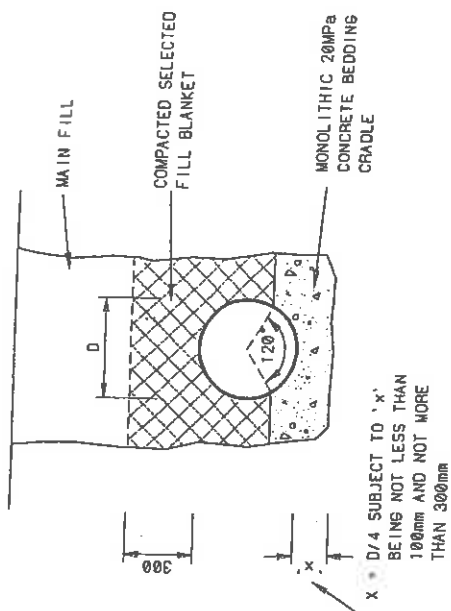
1. WHERE POSSIBLE THE BLOCK IS TO BE CAST AGAINST UNDISTURBED IN-SITU MATERIAL
2. ALL COUPLINGS SHALL ALWAYS REMAIN ACCESSIBLE

50mm ON ORIGINAL SCALE

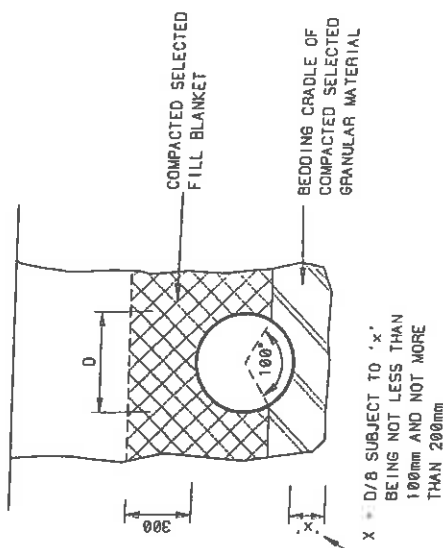
No		DATE		REVISIONS	
DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING					
TECHNICAL DESIGN SERVICES		DATE		DESIGNED: EKSTEEN, V.D. WALT & NISSEN	
ENGINEER :		17/3/99		DRAWN : EKSTEEN, V.D. WALT & NISSEN	
CHIEF ENGINEER (Pr. Eng)		17/3/99		CHECKED: EKSTEEN, V.D. WALT & NISSEN	
DIRECTOR (Pr. Eng)		17/3/99		CALCULATIONS FILE:	
TENDER No. /				CONTRACT No.	
ALL DIMENSIONS IN MILLIMETRES		DO NOT SCALE DRAWING			
REPUBLIC OF SOUTH AFRICA DEPARTMENT OF WATER AFFAIRS AND FORESTRY					
DIRECTOR GENERAL: M. MULLER					
TYPE DRAWING CONCRETE THRUST BLOCK : CONFIGURATION					
PROVINCE : NORTHERN		DISTRICT :		LOCALITY No.: ZZZZ-04	
OTHER No. 9522.13.31W		1 SHEET OF 13		REG. No. 125 840/97WE	

NOTE
OUTSIDE BARREL DIMENSION ϕ D

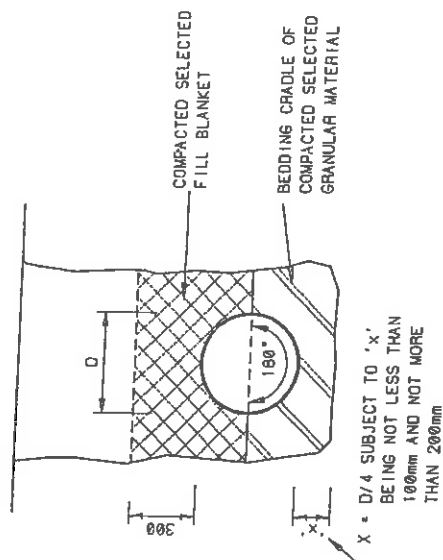
50mm ON ORIGINAL SCALE



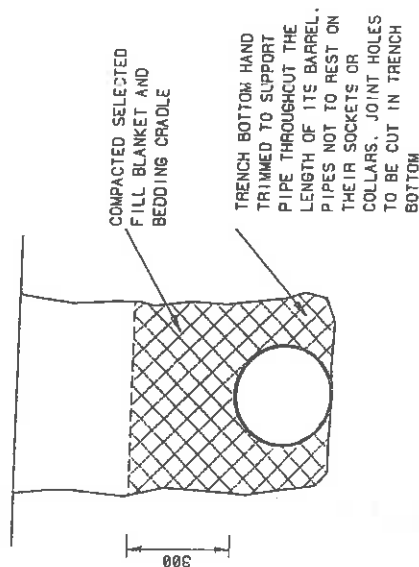
a) RIGID PIPE ON CLASS 'A' BED



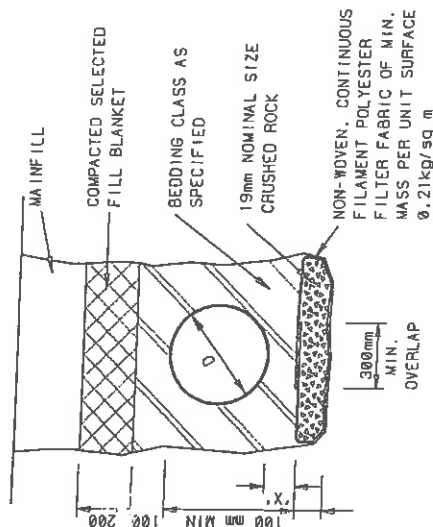
c) RIGID PIPE ON CLASS 'C' BED



b) RIGID PIPE ON CLASS 'B' BED



d) RIGID PIPE ON CLASS 'D' BED



e) TRENCH SUBSURFACE DRAIN

NO	DATE	REVISIONS

ALL DIMENSIONS IN MILLIMETRES	DO NOT SCALE DRAWING

DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING

TECHNICAL DESIGN SERVICES	DESIGNED: EKSTEEN, V.D. MALT & NISSEN	KEY CODES
ENGINEER :	DRAWN : EKSTEEN, V.D. MALT & NISSEN	TYP
CHIEF ENGINEER (P.P. Eng)	CHECKED: EKSTEEN, V.D. MALT & NISSEN	B60
DIRECTOR (P.P. Eng)	CALCULATIONS FILE:	PPE
TENDER No. /	CONTRACT No.	ASD

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER

PIPE BEDDING DETAILS FOR RIGID PIPES

PROVINCE : NORTHERN DISTRICT : LOCALITY No. : ZZZZ-04
OTHER No. 9522.13.32W 6 SHEET 10 OF
REG. No. 125 841/97ME

20 x 50mm CONICAL VENT
HOLE (2 OFF)

550mm x 550mm FABRICATED
MANHOLE COVER AS DETAILED ON
TYPE DRAWING NC: 125 811/97ME

REINFORCED CONCRETE SLAB
(REF. 193 MESH OR APPROVED
EQUIVALENT WITH 15mm COVER
TO UNDERSIDE OF SLAB)

MALTHEID WRAPPING
TO A TOTAL
THICKNESS OF 6mm

SUPPLY
PIPE

TYPICAL SECTION
1:10

- NOTES
- 1) CONCRETE TO BE CLASS 25/19
 - 2) BRICKWORK TO BE PLACED EVERY FOURTH COURSE

50mm ON ORIGINAL SCALE

PLAN
1:10

SCHEDULE OF FITTINGS

- ① IN-LINE TEE WITH OUTLET DIAMETER AS SPECIFIED IN THE
NODAL DESCRIPTIONS AND REDUCED TO A 25 BSP FEMALE
END CONNECTION
- ② 25ND GALVANISED BARREL NIPPLE
- ③ 25ND BRASS FULLWAY GATE VALVE TO SABS 775 CLASS 5
- ④ 25ND AUTOMATIC AIR RELEASE VALVE

DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING

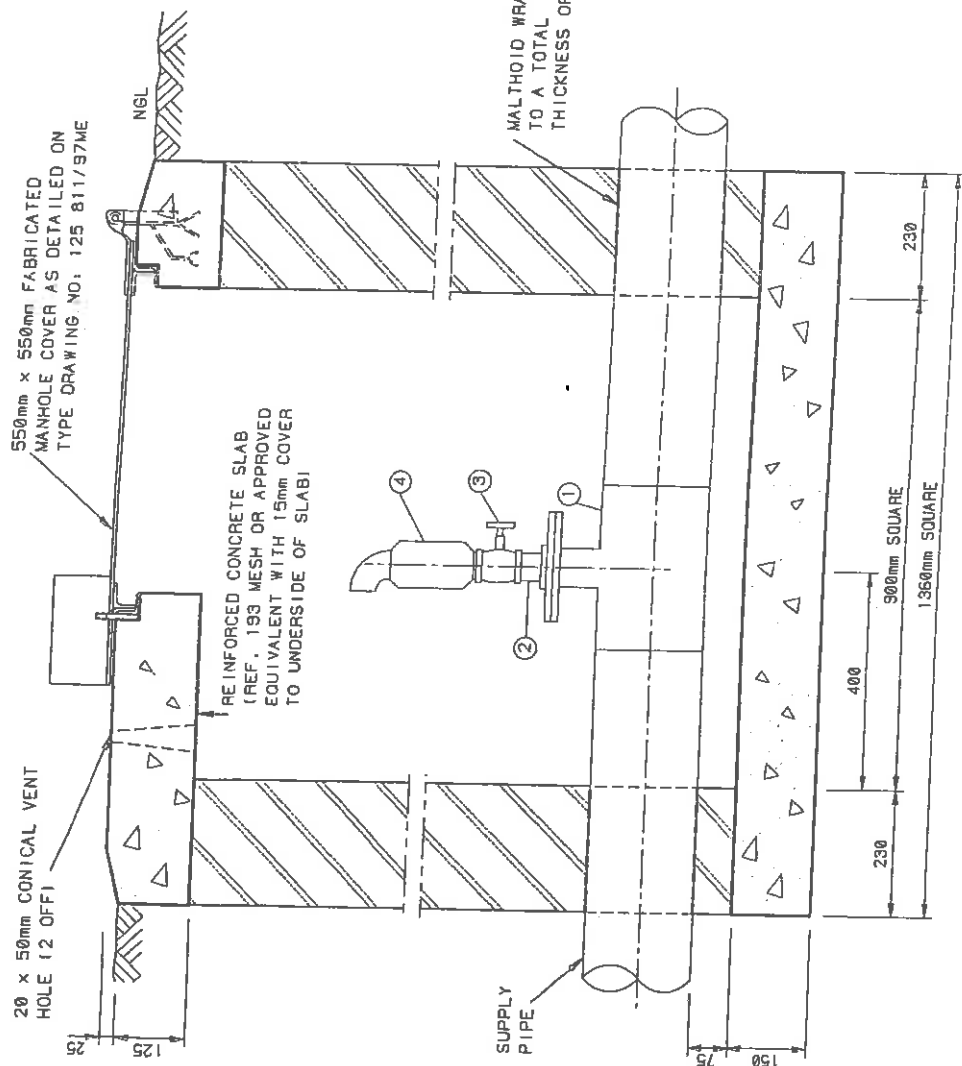
No	DATE	REVISIONS	TECHNICAL DESIGN SERVICES				KEY CODES			
			ENGINEER :	DATE	DESIGNED :	Y.D. WALT & NISSEN	TYPE	860	VAA	ASD
			CHIEF ENGINEER (Pr-Eng)	17/3/99	DRAWN :	Y.D. WALT & NISSEN				
			DIRECTOR (Pr-Eng)	17/3/99	CHECKED :	Y.D. WALT & NISSEN				
			TENDER No. /	17/3/99	CALCULATIONS FILE :					
ALL DIMENSIONS IN MILLIMETRES			DO NOT SCALE DRAWING			CONTRACT No.				

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER

TYPE DRAWING
AIR VALVE DETAILS : 25 ND SINGLE ORIFICE

PROVINCE : NORTHERN DISTRICT : LOCALITY No.: ZZZZ-04

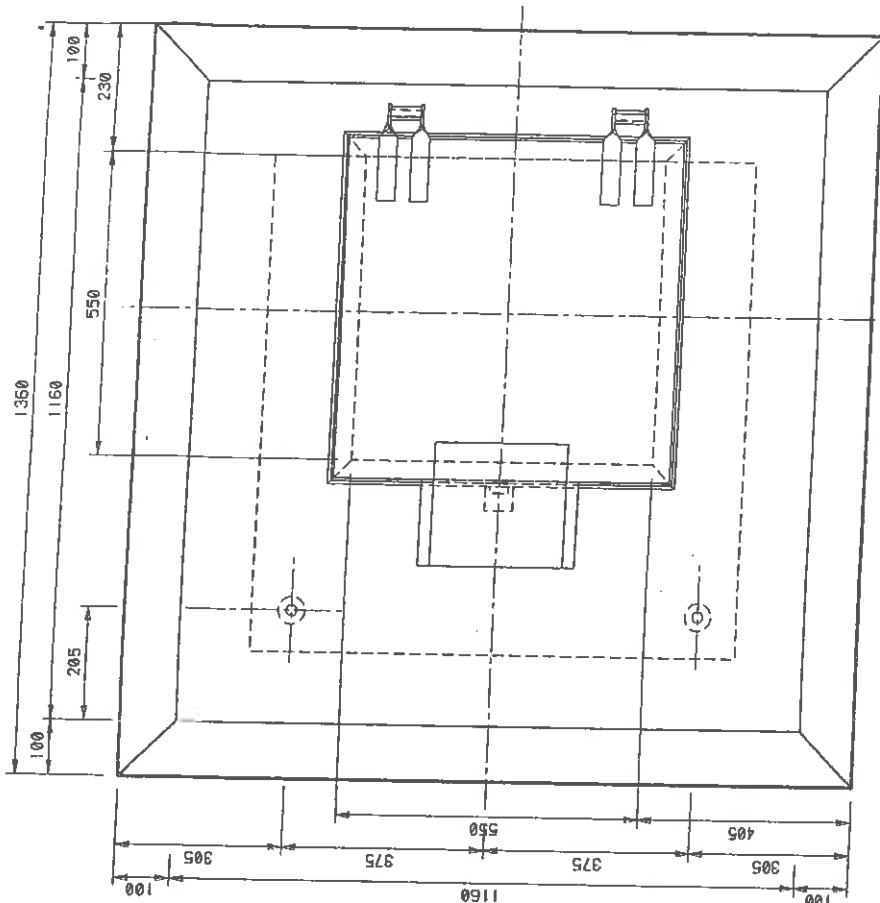
OTHER No. 9522.13.34W 8 SHEET 10 OF REG. No. 125 843/97ME



TYPICAL SECTION

01.10

- 1) CONCRETE TO BE CLASS 25/19
2) BRICKFORCE TO BE PLACED
EVERY FOURTH COURSE



PLAN
1:10

SCHEDULE OF FITTINGS

- ① IN-LINE HYDRANT TEE WITH OUTLET DIAMETER AS SPECIFIED IN THE NOBAL DESCRIPTIONS AND REDUCED TO A 50 BSP FEMALE END CONNECTION USING 1x80ND GALVANISED STEEL SCREW-ON FLANGE AND 1x80NDx50ND #81 REDUCING BUSH
- ② 50ND GALVANISED BARREL NIPPLE
- ③ 50ND BRASS FULLWAY GATE VALVE TO SABS 776 CLASS 6
- ④ 50ND COMBINATION AIR RELEASE VALVE

DIRECTORATE: MECHANICAL & ELECTRICAL ENGINEERING

ALL DIMENSIONS IN MILLIMETRES		DO NOT SCALE DRAWING		TECHNICAL DESIGN SERVICES		DESIGNED : ESTEEN, V.D. WALT & NISSEN		KEY CODES	
				ENGINEER :		DRAWN : ESTEEN, V.D. WALT & NISSEN		Typ	
				CHIEF ENGINEER (Pr. Eng)		CHECKED: ESTEEN, V.D. WALT & NISSEN		BDD	
				DIRECTOR (Pr. Eng)		CALCULATIONS FILE:		VAA	
				TENDER No. 1		CONTRACT No.		ASD	

REPUBLIC OF SOUTH AFRICA

DIRECTOR GENERAL: M. MULLER

TYPE DRAFTING

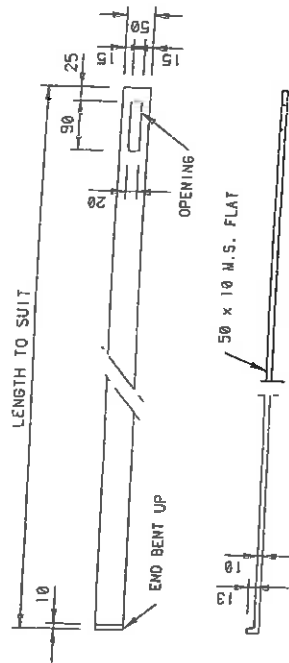
AIR VALVE DETAILS : 50 ND SINGLE ORIFICE

PROVINCE : NORTHERN

PROVINCE : NORTHERN

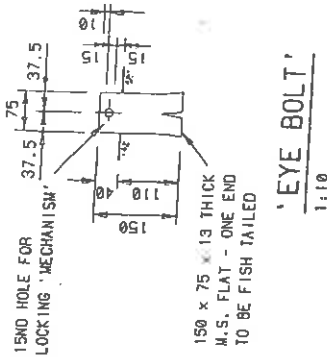
PROVINCE : NORTHERN	DISTRICT :	LOCALITY No. : ZZZZ-04
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OTHER No. 9522.13.35W	9 SHEET 10 OF	REG. No. 125 844/97ME
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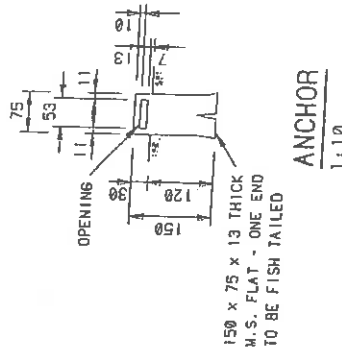


LOCKING BAR
1:10

- NOTES :
- 1) ALL M.S. COMPONENTS OF LOCKING BAR TO EITHER BE HOT DIPPED GALVANISED OR TREATED WITH 2 COATS OF BITUMASTIC PAINT, AS SPECIFIED.
 - 2) EACH LOCKING DEVICE MUST BE PROVIDED WITH EITHER A PADLOCK OR AN M12 x 25mm LONG LOCK BOLT AND NUT, AS SPECIFIED.



'EYE BOLT'
1:10

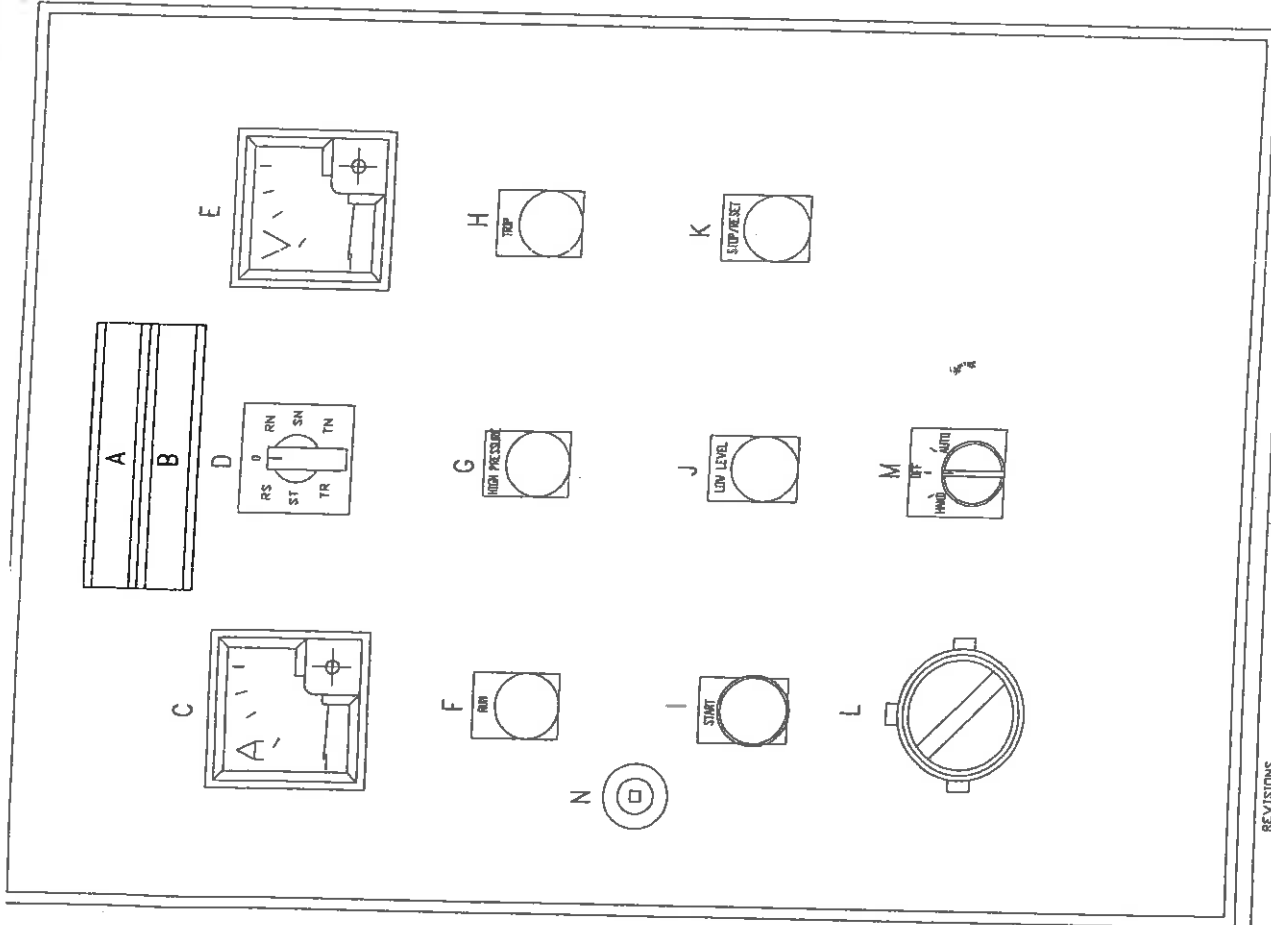


ANCHOR
1:10

50mm ON ORIGINAL SCALE

No		DATE		REVISIONS		DIRECTORATE, MECHANICAL & ELECTRICAL ENGINEERING									
						TECHNICAL DESIGN SERVICES		ENGINEER :		DATE		DESIGNED : ESTEEN, V.D. WALT & NISSEN		KEY CODES	
						CHIEF ENGINEER (Pr. Eng)		DATE		DRAWN : ESTEEN, V.D. WALT & NISSEN		TYP		B60	
						DIRECTOR (Pr. Eng)		DATE		CHECKED : ESTEEN, V.D. WALT & NISSEN		MAN		DET	
						TENDER No. /		CONTRACT No.		CALCULATIONS FILE :					
ALL DIMENSIONS IN MILLIMETRES		DO NOT SCALE DRAWING													
REPUBLIC OF SOUTH AFRICA DEPARTMENT OF WATER AFFAIRS AND FORESTRY DIRECTOR GENERAL : M. MULLER TYPE DRAWING STANDARD LOCKING DEVICE (WHEN REQUIRED) PROVINCE : NORTHERN DISTRICT : LOCALITY No. : ZZZZ-04 OTHER No. : 9522.13.36W 10 SHEET 10 OF REG. No. 125 810/97ME															





H - min dimension

SCHEDULE OF DOOR MOUNTED EQUIPMENT

A	25mm x 120mm EXTRUDED ALUMINUM LABEL HOLDER, POP RIVETED TO DOOR, ENGRAVED WITH RATING OF STARTER ENGRAVED (EXAMPLE II KV)
B	25mm x 120mm EXTRUDED ALUMINUM LABEL HOLDER, POP RIVETED TO DOOR, ENGRAVED WITH BOREHOLE NUMBER
C	25mm x 75mm ANNEALER
D	25mm x 50mm, 7 POSITION VOLTMETER SWITCH, ENGRAVED AS SHOWN
E	25mm x 75mm, 0 - 500 V VOLTMETER
F	22.5mm DIA. GREEN LED "HWP" INDICATION LAMP WITH ENGRAVED LABEL (WHITE ON BLACK)
G	22.5mm DIA. RED LED "HIGH PRESSURE" INDICATION LAMP WITH ENGRAVED LABEL (WHITE ON RED)
H	22.5mm DIA. GREEN "START" BUTTON WITH ENGRAVED LABEL (WHITE ON RED)
I	22.5mm DIA. RED LED "LOW LEVEL" INDICATION LAMP WITH ENGRAVED LABEL (WHITE ON RED)
J	22.5mm DIA. GREEN "STOP RESET" BUTTON WITH ENGRAVED LABEL (WHITE ON RED)
K	22.5mm DIA. "ON - OFF" BUTTARY TYPE PULLABLE MAIN SWITCH HANDLE YELLOW ESCUTCHION, RED HANDLE
L	22.5mm DIA. "HARD/FAST/AUTO" SELECTION SWITCH WITH ENGRAVED WHITE ON BLACK LABEL OF SPECIFIED
M	6mm SQUARE CAN TYPE DOOR LOCK

SCHEDULE OF MATERIAL OF BOX

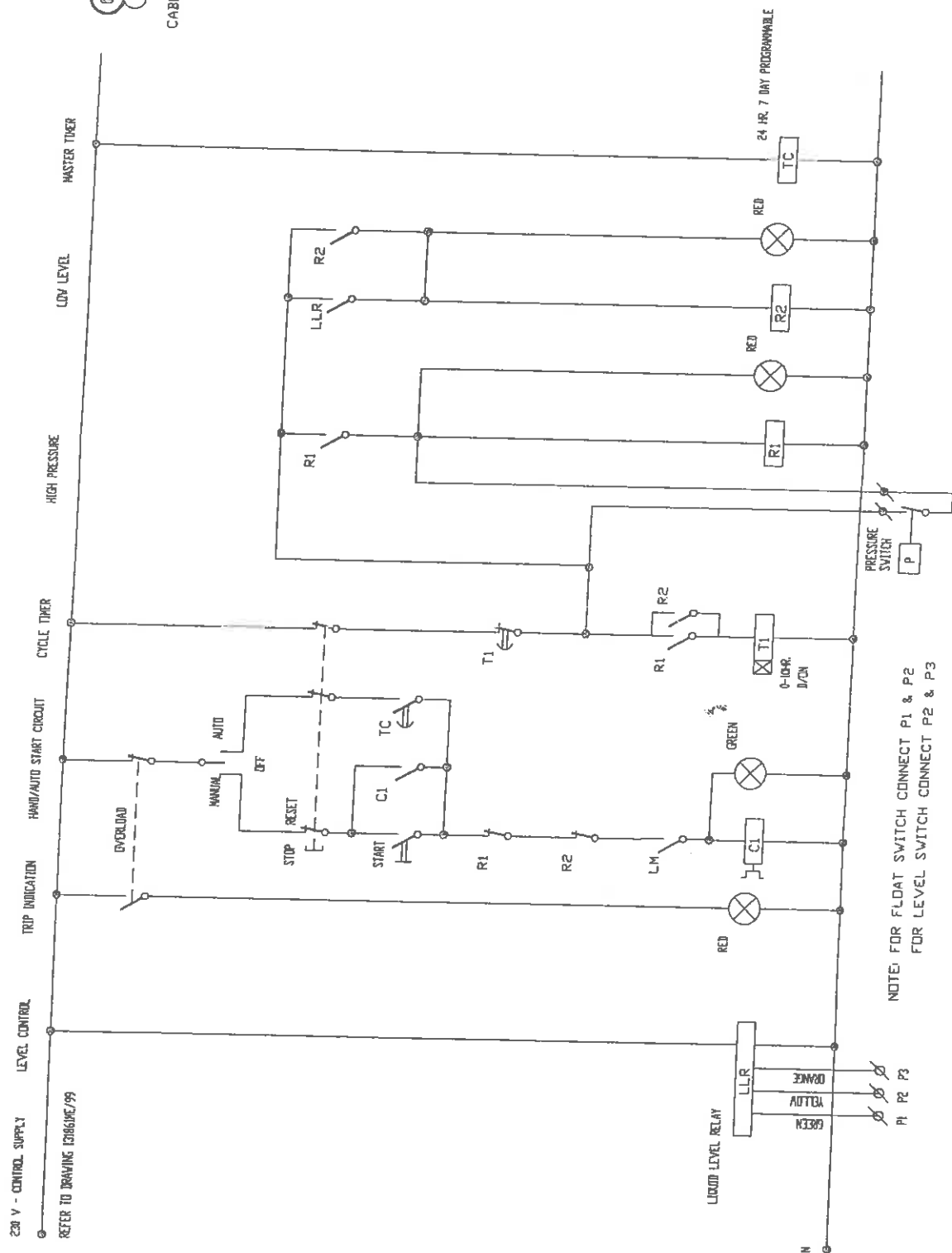
STEEL	2mm 3002 SHEET STEEL
FINISH	ORANGE PEEL POWDER COATED
CEILING	ELECTRIC ORANGE
SEAL	CONTINUOUS SEAL ON INSIDE OF DOOR TO PRESS AGAINST LIP OF BOX
CONSTRUCTION	ALL VELUX SOLID BOX CONSTRUCTION WITH DOOR FITTING OVER BOX LIPS TO FORM BEEP PROOF CONSTRUCTION
HINGES	CONEALED HINGES BEHIND DOOR EDGE BETWEEN DOOR AND BOX LIP (SEE DETAIL)
DIMENSIONS	MINIMUM DIMENSIONS OF BOX IN ACCORDANCE WITH TABLE ON THIS DRAWING

MINIMUM DIMENSIONS OF BOX (mm)

STARTER RATING (KV)	H - HEIGHT	V - WIDTH	DEPTH
5.5	560	400	200
7.5	560	400	200
11	650	500	250
15	800	600	300
18.5	950	800	300
22	950	800	300

No.		DATE		REVISIONS		DIRECTORATE OF MECHANICAL & ELECTRICAL ENGINEERING		REPUBLIC OF SOUTH AFRICA DEPARTMENT OF WATER AFFAIRS AND FORESTRY DIRECTOR GENERAL H. MULLER	
1		09/06/01		CHANGED DRAWING NUMBER		DESIGNED : DPL CONSULTING ENGINEERS 28/03/03		19/01/00	
ALL DIMENSIONS IN MILLIMETRES		DO NOT SCALE DRAWING		DRAWN : DPL CONSULTING ENGINEERS 28/03/03		CHECKED : DPL CONSULTING ENGINEERS 28/03/03		19/01/00	
TENDER No. /		DATE		CONTRACT No.		CALCULATIONS FILED		19/01/00	
DISTRICT :		LOCALITY No.:		OTHER No.		1		SHEET OF 7	
PROVINCE :		DISTRICT :		LOCALITY No.:		OTHER No.		1	
GENERAL ARRANGEMENT OF BOREHOLE STARTER PANEL		OFFICIAL No.:		131860ME/99		OFFICIAL No.:		131860ME/99	

230 V - CONTROL SUPPLY



NOTE: FOR FLOAT SWITCH CONNECT P1 & P2
FOR LEVEL SWITCH CONNECT P2 & P3

BOREHOLE PROBE DETAIL

DETAIL 1 - MATL. : BRASS

DETAIL 2 - MATL. : WESCONITE

DETAIL 3 - MATL. : BRASS

ASSEMBLY DETAIL

DIRECTORATE OF MECHANICAL & ELECTRICAL ENGINEERING

No.	DATE	REVISIONS
3	01/01/01	B/DN THER CIRCUIT CHANGED
2	09/08/01	CHANGED DRAWING NUMBER
1	02/08/01	CHANGED PROBE DIAMETER
ALL DIMENSIONS IN MILLIMETRES		DO NOT SCALE DRAWING

DIRECTORATE OF MECHANICAL & ELECTRICAL ENGINEERING			
TECHNICAL DESIGN SERVICES :	28/02/03	DESIGNED : DPL CONSULTING ENGINEERS	19/01/00
ENGINEER :	28/02/03	DRAWN : DPL CONSULTING ENGINEERS	19/01/00
CHIEF ENGINEER (P-Eng)	28/02/03	CHECKED : DPL CONSULTING ENGINEERS	19/01/00
DIRECTOR (P-Eng)	28/02/03	CALCULATIONS FILED	
TENDER No./		DATE	CONTRACT No.
		15/04/03	

 REPUBLIC OF SOUTH AFRICA DEPARTMENT OF WATER AFFAIRS AND FORESTRY  DIRECTOR GENERAL: M. MULLER		CONTROL DIAGRAM FOR DOL BOREHOLE STARTER LEVEL CONTROL & PRESSURE SWITCH CONTROL	
PROVINCE :		DISTRICT :	LOCALITY No.:
OTHER No.		3	SHEET No. 7
		REF. No. 131862ME/99	

No.	DATE	REVISIONS
3	02/10/01	
2	09/08/00	CYCLE TIMER AND STAR-DELTA TIMER SHANGED
		CHANGED DRAWING NUMBER
1	02/08/00	CHANGED PROBE DIAMETER
ALL DIMENSIONS IN MILLIMETRES		DO NOT SCALE DRAWING

DIRECTORATE OF MECHANICAL & ELECTRICAL ENGINEERING			
TECHNICAL DESIGN SERVICES :	DESIGNED :	DPL CONSULTING ENGINEERS	19/00/00
ENGINEER :	28/02/03	28/02/03	19/00/00
CHEF ENGINEER (P+Eng)	28/02/03	28/02/03	19/00/00
DIRECTOR (P+Eng)	28/02/03	28/02/03	19/00/00
TENDER No./	DATE	CONTRACT No.	DATE

REPUBLIC OF SOUTH AFRICA DEPARTMENT OF WATER AFFAIRS AND FORESTRY		DIRECTOR GENERAL, M. MULLER	
CONTROL DIAGRAM FOR STAR-DELTA BOREHOLE STARTER LEVEL CONTROL AND PRESSURE SWITCH CONTROL			
PROVINCE :	DISTRICT :	LOCALITY No.:	
OTHER No.	6	SHEET	7
REG.No.		131865ME/99	

ALTERNATIVE FLOW CONTROL

230 V - CONTROL SUPPLY

REFER TO DRAWING 13186-ME/99

TRIP INDICATION

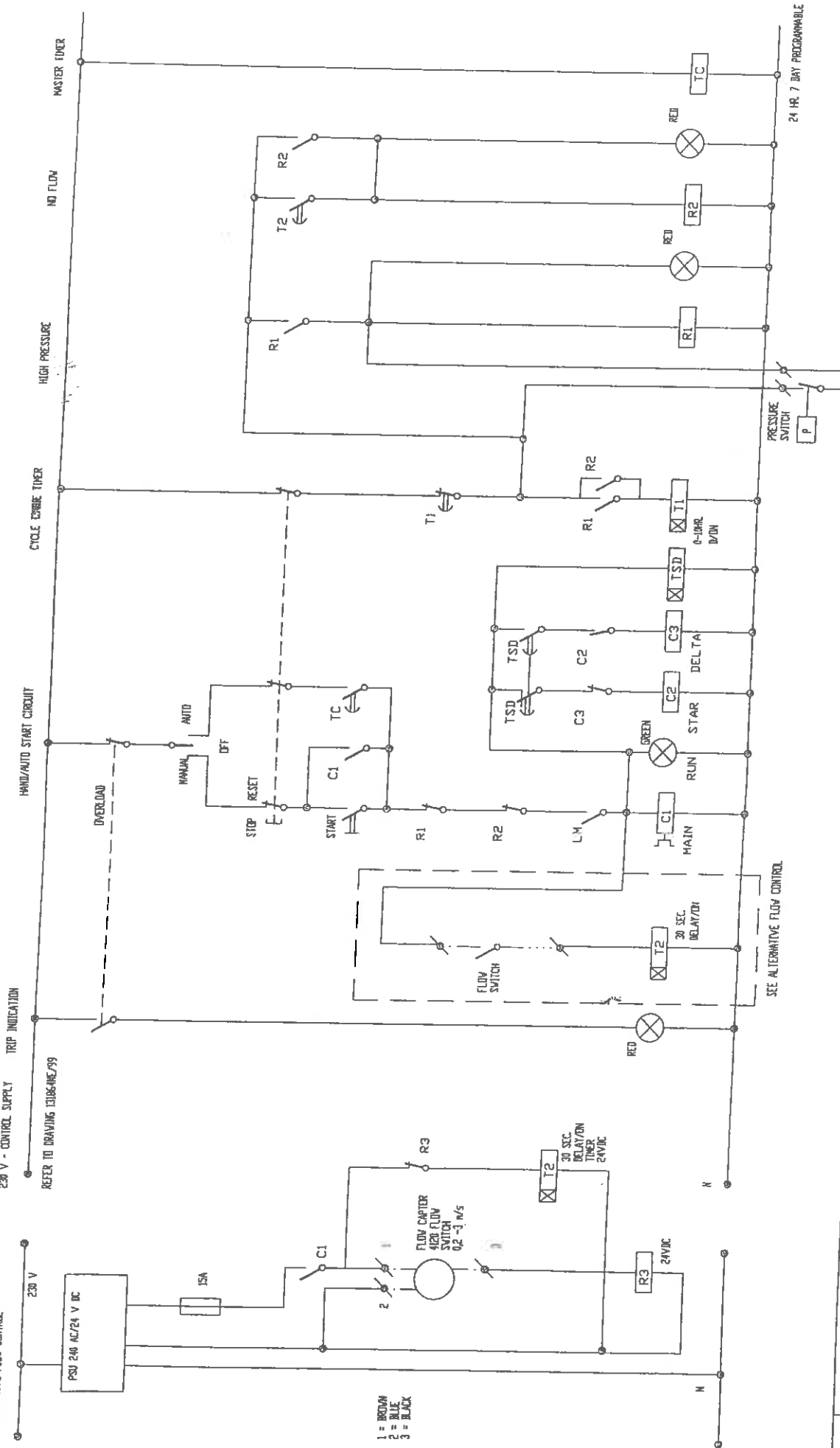
HAND/AUTO START CIRCUIT

CYCLE TIMER

HIGH PRESSURE

NO FLOW

MASTER TIMER



1 = BROWN
2 = BLUE
3 = BLACK

No.	DATE	REVISIONS
1	03/10/01	CYCLE TIMER AND STAR-DELTA TIMER CHANGED

ALL DIMENSIONS IN MILLIMETRES	DO NOT SCALE DRAWING
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DIRECTORATE OF MECHANICAL & ELECTRICAL ENGINEERING

TECHNICAL DESIGN SERVICES	28/02/03	DESIGNED: DPL CONSULTING ENGINEERS	09/08/01
ENGINEER	28/02/03	DRAWN: DPL CONSULTING ENGINEERS	09/08/01
CHIEF ENGINEER (P-Eng)	28/02/03	CHECKED: DPL CONSULTING ENGINEERS	09/08/01
DIRECTOR (P-Eng)	28/02/03	CALCULATIONS FILE	
TENDER No.		DATE	DATE

REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTOR GENERAL: M. MULLER

CONTROL DIAGRAM FOR STAR-DELTA BOREHOLE STARTER
PRESSURE CONTROL & FLOW SWITCH CONTROL

PROVINCE: DISTRICT: LOCALITY No.:
OTHER No.:
SHEET 7 OF 7
DRAWING No. 13186-ME/99

BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SECTION 4.5

COMMISSIONING AND COMPLETION CERTIFICATE

DEPARTMENT: WATER AND SANITATION
COMMISSIONING AND COMPLETION CERTIFICATE FOR

--

CONTRACTOR: _____ DATE _____

DWS ORDER NO. _____

DWS BID NO.		DWS 52-0816 WTE (Equip)		(Civil)		(M/E)
-------------	--	----------------------------	--	---------	--	-------

Note: Mark with a X where applicable.

	Purification Plant		Borehole		Booster Pump		Sewerage Works
	Pipe Work		Valves		Diesel Engines		Electrical

	ELECTRICAL		MECHANICAL		CIVIL
--	------------	--	------------	--	-------

A. Report to Province Head:

Name: _____ Signature: _____

Office Name: _____ Date Visited: _____

B. Report to Province Satellite Office:

Name: _____ Signature: _____ Office Name: _____ Date Visited: _____

1. **DETAIL:**

- | | |
|---|--|
| 1.1 Area Name: _____ | Village Name: _____ |
| 1.2 Water Source No. H _____ | Alternative No. _____ |
| 1.3 Maintenance No. W _____ | Serial No. _____ |
| 1.4 Engine/Motor Type & Model and kW _____ | Engine/Motor Type & Model and kW _____ |
| 1.5 Pump Type: _____ | Pump Model Name: _____ |
| 1.6 Pump Type: _____ | Pump Model Name: _____ |
| 1.7 Recommended Yield (l/s): _____ | Commissioning Yield (l/s): _____ |
| 1.8 Recommended Pumping Time (hrs/day): _____ | Rising main (pipe) pressure (kPa/Bar): _____ |
| 1.9 Pumpmotor alignment: _____ | Pump/motor vibration test _____ |
| 1.10 Scope of Work: _____ | |

2.	COMMISSIONING DONE BY: DWS					
	Name	Signature	Date	Contact Number	Fax	Cell No.

3. **FAULT LIST**

- 3.1 _____
- 3.2 _____
- 3.3 _____

4.	QUALITY ASSURANCE INSPECTION				
	Date inspected	Inspectors name	Signature	Telephone number	Cell No.
4.1					

5.	CONTRACTOR				
	Contractor	Name	Signature	Date	Contact Number
5.1					

Note: Commissioning form: Attached and submitted with the original invoice for payment

BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SECTION 4.6

ELECTRICAL BOREHOLE INSTALLATIONS: INSPECTIONS AND PRE-COMMISSIONING



DEPARTMENT: WATER AND SANITATION

FORM F
(Sheet 1 of 2)



**SECTION 4.6: ELECTRICAL BOREHOLE INSTALLATIONS:
INSPECTIONS AND PRE-COMMISSIONING**

DATE CARRIED OUT: _____

I hereby confirm that the Electrical and Mechanical work has been checked and that the following has been pre-commissioned.

Borehole No.: _____ Motor serial No. _____ Maintenance No. W _____

Province _____ Area _____ Settlement _____

DELIVERY YIELD (Taken from flow meter) _____ (l/s)

MARK APPLICABLE COLUMNS WITH AN X

All mechanical work was completed before electrical construction work commenced

YES	NO
YES	NO

The pump was started with the scour valve open at first attempt

A. Motor:

A1 Rotational direction of motor:

YES	NO
YES	NO

A2 Overload setting and measurements of electrical motor on full load, state Amps reading

A3 Set Star/Delta Timer:

Time: _____

B. Pressure gauge:

B1 Maximum bar on pressure gauge, indicate reading (Normally highest when starting against a full pipeline)

YES	NO
-----	----

Bar

C. Timers:

C1 Is duty cycle according to recommendation? _____ hours

C2 Set timer from _____ am to _____ pm or 24 hours cycle

C3 Set low level timer and pressure switch out on four hours

C3.1 Specify timer time setting: _____ hours

YES	NO
YES	NO
YES	NO

D. Low-level Probe:

D1 Sensitivity of probe levels checked.

D2 Specify level probe length _____ m.

D3 Is probe's positive and negative brass connectors soldered and filled with epoxy.

D4 Low level probe cuts off when probe is removed-indicate level

YES	NO
YES	NO

m

DEPARTMENT: WATER AND SANITATION



FORM F
(Sheet 2 of 2)

**SECTION 4.6: ELECTRICAL BOREHOLE INSTALLATIONS:
INSPECTIONS AND PRE-COMMISSIONING**

E. Pressure Switch:						
E1 Left side on zero.		<table border="1" style="display: inline-table;"> <tr> <td style="padding: 2px 10px;">YES</td> <td style="padding: 2px 10px;">NO</td> </tr> </table>		YES	NO	
YES	NO					
E2 If not on zero, specify reason: _____ and _____		<table border="1" style="display: inline-table;"> <tr> <td colspan="2" style="padding: 2px 10px;">Bar</td> </tr> </table>		Bar		
Bar						
E4 Right hand setting at least 3 Bar higher than the maximum reading on pipeline pressure gauge "when started against pressure"		<table border="1" style="display: inline-table;"> <tr> <td style="padding: 2px 10px;">YES</td> <td style="padding: 2px 10px;">NO</td> </tr> </table>		YES	NO	
YES	NO					
E5 Right hand side turned down to check cut off, indicate reading		<table border="1" style="display: inline-table;"> <tr> <td style="padding: 2px 10px;">YES</td> <td style="padding: 2px 10px;">NO</td> <td style="padding: 2px 10px;">Bar</td> </tr> </table>		YES	NO	Bar
YES	NO	Bar				
F. Panels:						
F1 Are earthing lightning arrestors checked? (Normally highest when starting against a full pipeline)		<table border="1" style="display: inline-table;"> <tr> <td style="padding: 2px 10px;">YES</td> <td style="padding: 2px 10px;">NO</td> </tr> </table>		YES	NO	
YES	NO					
F2 Are 10 mm ² bare copper external earth wires used between starter and meter box?		<table border="1" style="display: inline-table;"> <tr> <td style="padding: 2px 10px;">YES</td> <td style="padding: 2px 10px;">NO</td> </tr> </table>		YES	NO	
YES	NO					
F3 Check earth resistance reading between the meter box's earth and equipment		<table border="1" style="display: inline-table;"> <tr> <td style="padding: 2px 10px;">Reading:</td> <td style="width: 100px;"></td> </tr> </table>		Reading:		
Reading:						
F4 Resistance readings between the three phases and the earth Red _____ White _____ Blue _____		<table border="1" style="display: inline-table;"> <tr> <td style="padding: 2px 10px;">Reading:</td> <td style="width: 100px;"></td> </tr> </table>		Reading:		
Reading:						
F5 Check the resistance between the earth cable and the earth.		<table border="1" style="display: inline-table;"> <tr> <td style="padding: 2px 10px;">Reading:</td> <td style="width: 100px;"></td> </tr> </table>		Reading:		
Reading:						
G. Can pump be started with scour valve closed?		<table border="1" style="display: inline-table;"> <tr> <td style="padding: 2px 10px;">YES</td> <td style="padding: 2px 10px;">NO</td> </tr> </table>		YES	NO	
YES	NO					
This documentation must be attached to the Electrical and Mechanical Contractors' Invoices. If not, no payment will be forwarded. Remarks: _____						
QUALITY ASSURANCE INSPECTION						
DATE	INSPECTORS NAME	SIGNATURE	TELEPHONE NO.			
I hereby confirm that the electrical and mechanical work has been checked and the above has been pre-commissioned. If the above was not done, the cost for "comebacks" will be for the contractors' account. ELECTRICAL CONTRACTOR (Name) _____ Date _____ MECHANICAL CONTRACTOR (Name) _____ Date _____ ELECTRICAL INSPECTOR (Name) _____ Date _____						
	Revision Approved (R-1) Signature		Date			

BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SECTION 4.7

BOREHOLE INSTALLATIONS DETAILS

SECTION 4.7

Bid DWS 52-0816 WTE

Section 4.7
Borehole installations details

DEPARTMENT: WATER AND SANITATION



FORM G

SECTION 4.7: BOREHOLE INSTALLATIONS DETAILS



CONTRACTOR: _____			DWS ORDER NO. _____			Date: _____		
VILLAGE: _____				PROVINCE: _____				
BH NUMBER: _____				MAINTENANCE NO. _____				
LATITUDE: _____				LONGTITUDE: _____				
PUMP MAKE: _____			PUMP TYPE: _____					
HEAD TYPE: _____			COLUMN DIAMETER (mm): _____			PUMP DEPTH (m): _____		
light/heavy duty								
DESIGN YIELD (l/s): _____			DELIVERY YIELD (l/s): _____			RPM: _____		
PUMP PULLEY SIZE: _____				PUMP CONDITION: _____				
PRESSURE GAUGE READING: _____				SAUTER PRESSURE SETTING: _____				
DIESEL/ELECTRICAL: _____				MODEL: _____				
MOTOR (kW): _____			RPM: _____		SERIAL NO.: _____			
BELT: _____			LENGTH: _____		NUMBER: _____			
ENGINE PULLEY SIZE: _____				ENGINE CONDITION: _____				
RISING MAIN (LENGTH): _____			TYPE: _____			CLASS: _____		
EXISTING/NEW _____			PIPE CONDITION: _____					
DISTRIBUTION (LENGTH): _____			TYPE: _____			CLASS: _____		
EXISTING/NEW _____			PIPE CONDITION: _____					
TAPSTANDS (QTY): _____				ELECTRICAL METER READING: _____				
FLOW METER READING (m³): _____								
INSTALLATION DATE: _____			CAPITAL COST: _____					
COMMISSIONING DONE BY								
	NAME				DATE			
DWS								
TLC								
ENGINEER								
CONTRACTOR								

BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND WATER SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SECTION 5

PRICE SCHEDULES

BID NO. DWS 52-0816 WTE
RURAL COMMUNITY WATER SUPPLY AND SERVICES
EQUIPPING OF BOREHOLES NATIONWIDE
PRICE SCHEDULES
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BID NO. DWS 52-0816 WTE

RURAL COMMUNITY WATER SUPPLY AND SERVICES

EQUIPPING OF BOREHOLES NATIONWIDE

SPECIAL CONDITIONS OF CONTRACT

SCHEDULE 1: GENERAL

VAT INCLUDED IN BID PRICE

SCH- DULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	QUANT.	AMOUNT
1.1	8.5	SUMS STATED PROVISIONALLY BY THE ENGINEER			
		Provisional Sums			
1.1.1	8.5(a)	For work to be executed (upon specific instruction of the Engineer) by the Contractor and valued in terms of the "valuation of variations" clause in the conditions of contract.	Sum	R100 000	R100 000
1.1.2	8.5b1	For work to be executed by a Nominated Subcontractor.	Sum	R100 000	R100 000
1.1.3	8.5b2	Overheads, charges and profit on item 1.1.2	10%	R100 000	R10 000
1.1.4	8.5b1	For work to be executed by a Nominated Emerging Sub-Contractor which is to be employed under this programme.	Sum	R100 000	R100 000
1.1.5	8.5b2	Overheads, charges and profit on item 1.1.4 for assisting, training, co-ordinating and supervision of a Nominated Emerging Sub-Contractor which is to be employed under this programme.	10%	R100 000	R10 000
1.1.6	8.5b1	Payment to Eskom in respect of electrical connection fees	Sum	R100 000	R100 000
1.1.7	8.5b2	Overheads, charges and profit on item 1.1.6	10%	R100 000	R10 000
1.2	8.6	PRIME COSTS ITEMS			
1.2.1	8.6a	Prime cost of goods or materials to be supplied to the site of the Works upon specific instruction of the Engineer.	PC Sum	R100 000	R100 000
1.2.2	8.6b	Overheads, charges and profit on item 1.2.1	10%	R100 000	R10 000
1.2.3	PSA12.5	Specialist Contractors/Engineers	PC Sum	R100 000	R100 000
1.2.4	PSA12.5	Overheads, charges and profit on item 1.2.3	10%	R100 000	R10 000
1.2.5		Percentage mark-up as items approved by the client or his representative with attached invoices for material used.	10%	R1000 000	R10 000
		TOTAL SCHEDULE 1 CARRIED FORWARD TO SUMMARY			R660 000
Is offer strictly to specification Yes/No If not to specification, state deviation. Bidder name Note: BID price must include value added tax.					

SCHEDULE 2: DAYWORKS

VAT INCLUDED IN BID PRICE

SCHEDULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
2.1		DAYWORKS LABOUR		
		(a) Contractor's Representative	h	R
		(b) Surveyor	h	R
		(c) Qualified Artisan		
		(i) Plumber	h	R
		(ii) Boilermaker	h	R
		(iii) Bricklayer	h	R
		(iv) Plasterer	h	R
		(v) Welder with API 1104 Certificate	h	R
		(vi) Electrician	h	R
		(d) Foreman, leader-hand	h	R
		(e) Semi-skilled labourer	h	R
		(f) Labourer	h	R
		(g) Other		
		(i)	h	R
		(ii)	h	R
		(iii)	h	R
		(iv)	h	R
2.2		PLANTHIRE: WORK RATES ON SITE		
2.2.1		Crane 65 t - 80 t capacity	h	R
2.2.2		TLB 60 kW - 70 kW	h	R
2.2.3		Crawler Excavator 140 kW - 150 kW	h	R
2.2.4		Bulldozer 160 kW - 170 kW	h	R
2.2.5		Wheel loader 140 kW - 150 kW	h	R
2.2.6		Motor graders 150 kW - 160 kW	h	R
2.2.7		Wheel excavators 0,4 - 1,25 m ³ bucket size	h	R
2.2.8		Wheel tractor scrapers 15,0 - 16 m ³	h	R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
2.2.9		Tow tractors 200 kW - 250 kW	h	R
2.2.10		(a) Water tankers 5 000 litre	h	R
		(b) Water tankers 10 000 litre	h	R
2.2.11		Dump trucks 10 - 15 m ³	h	R
2.2.12		Tip trucks		
		(a) 6 m ³	h	R
		(b) 10 m ³	h	R
2.2.13		Flat bed trucks		
		(a) 5t	km	R
		(b) 7t	km	R
2.2.14		LDV		
		(a) 2 x 4WD	km	R
		(b) 4 x 4WD	km	R
2.2.15		Lowbed 50 ton	km	R
2.2.16		Plate compactors & tampers	h	R
2.2.17		Grid rollers. Ballasted mass 14 600 kg	h	R
2.2.18		Pneumatic tyred rollers 4 000 load/wheel kg	h	R
2.2.19		Self propelled vibrating roller (smooth) 7 000 - 11 300 kg	h	R
2.2.20		Self propelled vibrating roller (padfoot) 5 900 - 12 000 kg	h	R
2.2.21		Walk-behind vibrating rollers		
		(a) 500 - 630 kg	h	R
		(b) 980 - 1 350 kg	h	R
2.2.22		Towed vibrating roller	h	R
2.2.23		Portable compressors - Diesel (9,0 - 10,0 m ³ /min.)	h	R
2.2.24		Concrete mixer (350 ℓ: diesel driven)	h	R
2.2.25		Concrete saw (self propelled) 10 - 15 kW	h	R
2.2.26		Concrete vibrators (35 - 60 mm DN)	h	R
2.2.27		Dumpers 0,5 m ³ (Hydraulic tip)	h	R
2.2.28		Water pump with 80 mm DN outlet (diesel driven)	h	R
2.2.29		Arc-welding unit (300 A)	h	R
2.2.30		Generating sets		
		(a) 1,5 kVA (petrol) 220V	h	R
		(b) 5 kVA (petrol) 220V	h	R
		(c) 30 kVA (diesel) 380V - 3ph	h	R
		(d) 50 kVA (diesel) 380V - 3ph	h	R
		(e) 100 kVA (diesel) 380V - 3ph	h	R
		SUBTOTAL CARRIED FORWARD		R

SCHEDULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
2.3		BROUGHT FORWARD LABOUR BASED TOOLS (a) Pick (b) Shovel (c) Crowbar (d) Bucket (10 ℓ) (e) Wheelbarrow	day day day day day	R R R R R
2.4		Percentage mark-up on items approved by the client or representative with attached invoices for material used.	10%	10%
		TOTAL SCHEDULE 2 CARRIED FORWARD TO SUMMARY		R
Is offer strictly to specification Yes/No If not to specification, state deviation. Bidder name Note: BID price must include value added tax.				

SCHEDULE 3: SMALL DIAMETER CLEARWATER SUPPLY PIPELINES

VAT INCLUDED IN BID PRICE

SCHE- DULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
3.		SMALL DIAMETER CLEARWATER SUPPLY PIPELINES		
3.1	SABS	EARTHWORKS (Pipe trenches)		
3.1.1	1200DB	SITE CLEARANCE		
	8.3.1a	(a) Clear vegetation and trees of girth up to 1 m	m ²	R
	8.3.1b	(b) Clear trees of girth over 1 m	no	R
	8.3.1c	(c) Remove topsoil (150 mm depth)	m ²	R
3.1.2	SABS	EXCAVATION		
3.1.2.1	120)DB	Excavation in all materials for trenches for 200 mm nominal diameter pipes and smaller. Rates include backfill, compact and disposal of surplus and unsuitable material.		
	8.3.2a	(a) Up to 1,5 m deep	m	R
		(b) Over 1,5 m up to 2,5 m deep (Provisional)	m	R
3.1.2.2	8.3.2b	Extra-over item for 3.1.2.1		
		(a) Intermediate excavation (Prov.)	m ³	R
		(b) Hard rock excavation (Prov.)	m ³	R
3.1.2.3	8.3.2c	Excavate and disposal of unsuitable material from trench bottom (Prov.)	m ³	R
3.1.2.4	8.3.3.1b	Import backfill material from designated borrow pits (Prov.)	m ³	R
3.1.2.5	8.3.3.2	Opening up and closing down of designated borrow pit	ha	R
3.1.2.6	8.3.3.3	Compaction in road reserve	m ³	R
3.1.2.7	8.3.3.4	Overhaul		
		(a) Limited overhaul (0,5 to 1,0 km) (Prov.)	m ³	R
		(b) Long overhaul (Prov.)	m ³ /km	R
3.1.2.8	8.3.4.a	Shore trench opposite structure or service	m	R
3.1.2.9		Existing services that intersect or adjoin a pipe trench		
	8.3.5a	(a) Services that intersect a trench	no	R
	8.3.5b	(b) Services that adjoin a trench	m	R
3.1.2.10		Reinstate road surfaces complete with all courses		
	8.3.6.1a	(a) Gravel on shoulders	m ²	R
	8.3.6.1b	(b) Asphalt of thickness 40 mm in parking area	m ²	R
	8.3.6.1c	(c) Asphalt of thickness 40 mm in roadway	m ²	R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
3.2	SABS 1200LB	BEDDING (pipes)		
3.2.1		Supply only of bedding by importation		
3.2.2.1	8.2.2.1	From other necessary excavations (Prov.)		
		(a) Selected granular material	m ³	R
		(b) Selected fill material	m ³	R
3.2.2.2	8.2.2.2.	From borrow pits (Prov.)		
		(a) Selected granular material	m ³	R
		(b) Selected fill material	m ³	R
3.2.2.3	8.2.2.3	From commercial sources (Prov.)		
		(a) Selected granular material	m ³	R
		(b) Selected fill material	m ³	R
3.2.3	8.2.3	Concrete bedding cradle class 20/19	m ³	R
3.2.4	8.2.4	Encasing of pipes in concrete class 20/19	m ³	R
3.2.5	8.2.5	Overhaul of material for bedding cradle and selected fill blanket (Prov.)	m ³ /km	R
3.3	SABS 1200L	MEDIUM PRESSURE PIPELINES		
3.3.1		uPVC Pressure Pipes and Fittings		
3.3.1.1	8.2.1	Supply, lay, bed and test the following uPVC pressure pipes (conforming with SABS 946 Part 1 specifications) in 6m lengths, each pipe fitted at one end with socket for Mechanical jointing, in the following diameters:		
		(a) 200 mm dia Class 12	m	R
		(b) 200 mm dia Class 09	m	R
		(c) 200 mm dia Class 06	m	R
		(d) 160 mm dia Class 12	m	R
		(e) 160 mm dia Class 09	m	R
		(f) 160 mm dia Class 06	m	R
		(g) 140 mm dia Class 12	m	R
		(h) 140 mm dia Class 09	m	R
		(i) 140 mm dia Class 06	m	R
		(j) 125 mm dia Class 12	m	R
		(k) 125 mm dia Class 09	m	R
		(l) 125 mm dia Class 06	m	R
		(m) 110 mm dia Class 12	m	R
		(n) 110 mm dia Class 09	m	R
		(o) 110 mm dia Class 06	m	R
		(p) 90 mm dia Class 12	m	R
		(q) 90 mm dia Class 09	m	R
		(r) 90 mm dia Class 06	m	R
		(s) 75 mm dia Class 12	m	R
		(t) 75 mm dia Class 09	m	R
		(u) 75 mm dia Class 06	m	R
		(v) 63 mm dia Class 12	m	R
		(w) 63 mm dia Class 09	m	R
		(x) 63 mm dia Class 06	m	R
		(y) 50 mm dia Class 12	m	R
		(z) 50 mm dia Class 09	m	R
		(aa) 50 mm dia Class 06	m	R
		SUBTOTAL CARRIED FORWARD		R

SCHEDULE NO.	PAY-MENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
3.3.1.2	82.2	Extra-over item 3.3.1 for the supply, laying and bedding of specials complete with couplings. Note: Fittings to be suitable for coupling directly (mechanically) onto pipes. Each fitting socketed for mechanical jointing. Fitting for PVC Class 16; of PVC, cast iron or epoxy-painted steel.		
3.3.1.2.1		Bends 90° (a) 200 mm dia (b) 160 mm dia (c) 140 mm dia (d) 125 mm dia (e) 110 mm dia (f) 90 mm dia (g) 75 mm dia (h) 63 mm dia (i) 50 mm dia	no no no no no no no no no no	R R R R R R R R R
3.3.1.2.2		Bends 45° (a) 200 mm dia (b) 160 mm dia (c) 140 mm dia (d) 125 mm dia (e) 110 mm dia (f) 90 mm dia (g) 75 mm dia (h) 63 mm dia (i) 50 mm dia	no no no no no no no no no no	R R R R R R R R R
3.3.1.2.3		Bends 22,5° (a) 200 mm dia (b) 160 mm dia (c) 140 mm dia (d) 125 mm dia (e) 110 mm dia (f) 90 mm dia (g) 75 mm dia (h) 63 mm dia (i) 50 mm dia	no no no no no no no no no no	R R R R R R R R R
3.3.1.2.4		Bends 11,25° (a) 200 mm dia (b) 160 mm dia (c) 140 mm dia (d) 125 mm dia (e) 110 mm dia (f) 90 mm dia (g) 75 mm dia (h) 63 mm dia (i) 50 mm dia	no no no no no no no no no no	R R R R R R R R R
3.3.1.2.5		Tees (a) 200 mm dia (b) 200 x 160 mm dia (c) 200 x 110 mm dia (d) 160 mm dia (e) 160 x 110 mm dia (f) 160 x 90 mm dia (g) 140 mm dia (h) 125 mm dia (i) 110 mm dia (j) 110 x 90 mm dia	no no no no. no no no no no no no	R R R R R R R R R R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAY- MENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
		(k) 110 x 75 mm dia	no	R
		(l) 110 x 63 mm dia	no	R
		(m) 90 mm dia	no	R
		(n) 90 x 63 mm dia	no	R
		(o) 75 mm dia	no	R
		(p) 63 mm dia	no	R
		(q) 50 mm dia	no	R
3.3.1.2.6		Scour Tee (100 DN flanged outlet drilled SABS 1123 Table 1600/3)		
		(a) 200 mm dia	no	R
		(b) 160 mm dia	no	R
		(c) 110 mm dia	no	R
		(d) 90 mm dia	no	R
3.3.1.2.7		Reducers (socketed both ends)		
		(a) 200 x 160 mm dia	no	R
		(b) 160 x 110 mm dia	no	R
		(c) 110 x 90 mm dia	no	R
		(d) 90 x 63 mm dia	no	R
3.3.1.2.8		Reducers (spigot and socket)		
		(a) 200 x 110 mm dia	no	R
		(b) 200 x 90 mm dia	no	R
		(c) 160 x 140 mm dia	no	R
		(d) 160 x 125 mm dia	no	R
		(e) 160 x 90 mm dia	no	R
		(f) 140 x 110 mm dia	no	R
		(g) 140 x 125 mm dia	no	R
		(h) 125 x 110 mm dia	no	R
		(i) 110 x 75 mm dia	no	R
		(j) 110 x 63 mm dia	no	R
		(k) 110 x 50 mm dia	no	R
		(l) 90 x 75 mm dia	no	R
		(m) 90 x 63 mm dia	no	R
		(n) 90 x 50 mm dia	no	R
		(o) 75 x 63 mm dia	no	R
		(p) 75 x 50 mm dia	no	R
		(q) 63 x 50 mm dia	no	R
3.1.2.9		End caps		
		(a) 200 mm dia	no	R
		(b) 160 mm dia	no	R
		(c) 110 mm dia	no	R
		(d) 90 mm dia	no	R
		(e) 75 mm dia	no	R
		(f) 63 mm dia	no	R
		(g) 50 mm dia	no	R
3.3.1.2.10		Repair coupling		
		(a) 200 mm dia	no	R
		(b) 160 mm dia	no	R
		(c) 110 mm dia	no	R
		(d) 90 mm dia	no	R
		(e) 63 mm dia	no	R
3.3.1.2.11		Flange Adaptor (drilled SABS 1123 Table 1600/3)		
		(a) 200 mm dia	no	R
		(b) 160 mm dia	no	R
		(c) 140 mm dia	no	R
		(d) 125 mm dia	no	R
		(e) 110 mm dia	no	R
		(f) 90 mm dia	no	R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAY- MENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		
		(g) 75 mm dia	no	R
		(h) 63 mm dia	no	R
		(i) 50 mm dia	no	R
3.3.1.2.12		Saddle Clamp (tap drilled 252 BSP)		
		(a) 200 mm dia	no	R
		(b) 160 mm dia	no	R
		(c) 110 mm dia	no	R
		(d) 90 mm dia	no	R
		(e) 75 mm dia	no	R
		(f) 63 mm dia	no	R
3.3.1.2.13		Cast Iron Gate Valves (SABS 664 Class 16)		
		Spigot ended for uPVC pipework in the following nominal diameters:		
		(a) 200 mm	no	R
		(b) 160 mm	no	R
		(c) 110 mm	no	R
		(d) 90 mm	no	R
		(e) 63 mm	no	R
3.3.2		MGI PIPES AND FITTINGS		
3.3.2.1	8.2.1	Supply, lay, bed and test the following MGI pipes (conforming to SABS 62-1989) in 6,7 m lengths, each pipe fitted at one end with a parallel socket for jointing, in the following diameters:		
		(a) 150 DN	no	R
		(b) 100 DN	no	R
		(c) 80 DN	no	R
		(d) 65 DN	no	R
		(e) 50 DN	no	R
		(f) 40 DN	no	R
		(g) 32 DN	no	R
		(h) 25 DN	no	R
		(i) 20 DN	no	R
		(j) 15 DN	no	R
3.3.2.2	8.2.2	Extra-over item 3.3.2.1 for the supply, laying and bedding of galvanized specials for fixing onto MGI pipes. Fittings to be suitable for coupling to MGI pipes and to be in accordance with SABS 509-1975 as amended 1989.		
3.3.2.2.1		Threaded boss flanges drilled SABS 1123 Table 1600/4 in the following sizes:		
		(a) 150 DN	no	R
		(b) 100 DN	no	R
		(c) 80 DN	no	R
		(d) 65 DN	no	R
		(e) 50 DN	no	R
		(f) 40 DN	no	R
3.3.2.2.2		Malleable iron parallel socket		
		(a) 150 DN	no	R
		(b) 100 DN	no	R
		(c) 80 DN	no	R
		(d) 65 DN	no	R
		(e) 50 DN	no	R
		(f) 40 DN	no	R
		(g) 332 DN	no	R
		(h) 25 DN	no	R
		(i) 20 DN	no	R
		(j) 15 DN	no	R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAY- MENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
3.3.2.2.3		Conical Socket Unions		
		(a) 80 DN	no	R
		(b) 65 DN	no	R
		(c) 50 DN	no	R
		(d) 40 DN	no	R
		(e) 32 DN	no	R
		(f) 25 DN	no	R
		(g) 20 DN	no	R
		(h) 15 DN	no	R
3.3.2.2.4		Barrel Nipple		
		(a) 150 DN	no	R
		(b) 100 DN	no	R
		(c) 80 DN	no	R
		(d) 65 DN	no	R
		(e) 50 DN	no	R
		(f) 40 DN	no	R
		(g) 32 DN	no	R
		(h) 25 DN	no	R
		(i) 20 DN	no	R
		(j) 15 DN	no	R
3.3.2.2.5		Tee		
		(a) 150 DN	no	R
		(b) 150 x 100 DN	no	R
		(c) 150 x 80 DN	no	R
		(d) 150 x 50 DN	no	R
		(e) 100 DN	no	R
		(f) 100 x 80 DN	no	R
		(g) 100 x 50 DN	no	R
		(h) 100 x 40 DN	no	R
		(i) 80 DN	no	R
		(j) 80 x 65 DN	no	R
		(k) 80 x 50 DN	no	R
		(l) 80 x 40 DN	no	R
		(m) 80 x 32 DN	no	R
		(n) 80 x 25 DN	no	R
		(o) 65 DN	no	R
		(p) 65 x 50 DN	no	R
		(q) 65 x 40 DN	no	R
		(r) 65 x 32 DN	no	R
		(s) 65 x 25 DN	no	R
		(t) 50 DN	no	R
		(u) 50 x 40 DN	no	R
		(v) 50 x 32 DN	no	R
		(w) 50 x 25 DN	no	R
		(x) 50 x 20 DN	no	R
		(y) 50 x 15 DN	no	R
		(z) 40 DN	no	R
		(aa) 40 x 32 DN	no	R
		(ab) 40 x 25 DN	no	R
		(ac) 40 x 20 DN	no	R
		(ad) 40 x 15 DN	no	R
		(ae) 32 DN	no	R
		(af) 32 x 25 DN	no	R
		(ag) 32 x 20 DN	no	R
		(ah) 32 x 15 DN	no	R
		(ai) 25 DN	no	R
		(aj) 25 x 20 DN	no	R
		(ak) 25 x 15 DN	no	R
		(al) 20 DN	no	R
		(am) 20 x 15 DN	no	R
		(an) 15 DN	no	R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAY- MENT REF.	DESCRIPTION	UNIT	RATE
3.3.2.2.6		BROUGHT FORWARD		R
		Cross		
		(a) 100 DN	no	R
		(b) 80 DN	no	R
		(c) 65 DN	no	R
		(d) 50 DN	no	R
		(e) 40 DN	no	R
		(f) 32 DN	no	R
		(g) 25 DN	no	R
		(h) 20 DN	no	R
		(i) 15 DN	no	R
3.3.2.2.7		Reducing Bush		
		(a) 150 x 100 DN	no	R
		(b) 150 x 80 DN	no	R
		(c) 100 x 80 DN	no	R
		(d) 100 x 65 DN	no	R
		(e) 100 x 50 DN	no	R
		(f) 80 x 65 DN	no	R
		(g) 80 x 50 DN	no	R
		(h) 65 x 50 DN	no	R
		(i) 65 x 40 DN	no	R
		(j) 50 x 40 DN	no	R
		(k) 50 x 32 DN	no	R
		(l) 50 x 25 DN	no	R
		(m) 40 x 32 DN	no	R
		(n) 40 x 25 DN	no	R
		(o) 32 x 25 DN	no	R
		(p) 25 x 20 DN	no	R
		(q) 25 x 15 DN	no	R
		(r) 20 x 15 DN	no	R
3.3.2.2.8		Reducing Socket		
		(a) 150 x 100 DN	no	R
		(b) 150 x 50 DN	no	R
		(c) 100 x 80 DN	no	R
		(d) 100 x 50 DN	no	R
		(e) 80 x 65 DN	no	R
		(f) 80 x 50 DN	no	R
		(g) 65 x 50 DN	no	R
		(h) 50 x 40 DN	no	R
		(i) 50 x 32 DN	no	R
		(j) 50 x 25 DN	no	R
		(k) 40 x 32 DN	no	R
		(l) 40 x 25 DN	no	R
		(m) 32 x 25 DN	no	R
		(n) 25 x 20 DN	no	R
		(o) 25 x 15 DN	no	R
		(p) 20 x 15 DN	no	R
3.3.2.2.9		Reducing Elbows		
		(a) 32 x 25 DN	no	R
		(b) 25 x 15 DN	no	R
		(c) 20 x 15 DN	no	R
3.3.2.2.10		Elbows M/F		
		(a) 100 DN	no	R
		(b) 80 DN	no	R
		(c) 65 DN	no	R
		(d) 50 DN	no	R
		(e) 40 DN	no	R
		(f) 32 DN	no	R
		(g) 25 DN	no	R
		(h) 20 DN	no	R
		(i) 15 DN	no	R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAY- MENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
3.3.2.2.11		Elbows (female)		
		(a) 150 DN	no	R
		(b) 100 DN	no	R
		(c) 80 DN	no	R
		(d) 65 DN	no	R
		(e) 50 DN	no	R
		(f) 40 DN	no	R
		(g) 32 DN	no	R
		(h) 25 DN	no	R
		(i) 20 DN	no	R
		(j) 15 DN	no	R
3.3.2.2.12		Bends (90°) M/F		
		(a) 150 DN	no	R
		(b) 100 DN	no	R
		(c) 80 DN	no	R
		(d) 65 DN	no	R
		(e) 50 DN	no	R
		(f) 40 DN	no	R
		(g) 32 DN	no	R
		(h) 25 DN	no	R
		(i) 20 DN	no	R
		(j) 15 DN	no	R
3.3.2.2.13		Bends (90°) female		
		(a) 150 DN	no	R
		(b) 100 DN	no	R
		(c) 80 DN	no	R
		(d) 65 DN	no	R
		(e) 50 DN	no	R
		(f) 40 DN	no	R
		(g) 32 DN	no	R
		(h) 25 DN	no	R
		(i) 20 DN	no	R
		(j) 15 DN	no	R
3.3.2.2.14		Bends (45°) M/F		
		(a) 150 DN	no	R
		(b) 100 DN	no	R
		(c) 80 DN	no	R
		(d) 64 DN	no	R
		(e) 50 DN	no	R
		(f) 40 DN	no	R
		(g) 32 DN	no	R
		(h) 25 DN	no	R
		(i) 20 DN	no	R
		(j) 15 DN	no	R
3.3.2.2.15		Plugs		
		(a) 150 DN	no	R
		(b) 100 DN	no	R
		(c) 80 DN	no	R
		(d) 65 DN	no	R
		(e) 50 DN	no	R
		(f) 40 DN	no	R
		(g) 32 DN	no	R
		(h) 25 DN	no	R
		(i) 20 DN	no	R
		(j) 15 DN	no	R
3.3.2.2.16		End caps		
		(a) 80 DN	no	R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAY- MENT REF.	DESCRIPTION	UNIT	RATE	
3.3.3 3.3.3.1	8.2.1	BROUGHT FORWARD		R	
		(b) 65 DN	no	R	
		(c) 50 DN	no	R	
		(d) 40 DN	no	R	
		(e) 32 DN	no	R	
		(f) 25 DN	no	R	
		(g) 20 DN	no	R	
		(h) 15 DN	no	R	
		HDPe PIES AND FITTINGS			
		Supply, lay, bed and test the following HDPe type IV pipes (conforming to SABS 533 - Part 2: 1982 amended 1994), in the following diameters and class.			
		(a) 75 DN Class 16	m	R	
		(b) 74 DN Class 12	m	R	
		(c) 75 DN Class 10	m	R	
		(d) 63 DN Class 16	m	R	
		(e) 63 DN Class 12	m	R	
		(f) 63 DN Class 10	m	R	
		(g) 50 DN Class 16	m	R	
		(h) 50 DN Class 12	m	R	
		(i) 50 DN Class 10	m	R	
		(j) 40 DN Class 16	m	R	
		(k) 40 DN Class 12	m	R	
		(l) 40 DN Class 10	m	R	
		(m) 32 DN Class 16	m	R	
		(n) 32 DN Class 12	m	R	
		(o) 32 DN Class 10	m	R	
	(p) 25 DN Class 16	m	R		
	(q) 25 DN Class 12	m	R		
	(r) 25 DN Class 10	m	R		
	(s) 20 DN Class 16	m	R		
	(t) 20 DN Class 12	m	R		
	(u) 20 DN Class 10	m	R		
	3.3.3.2	8.2.2	Extra-over item 3.3.3.1 for supply, laying and bedding of compression fittings for use with HDPe Type IV pipes.		
	3.3.3.2.1		Coupling		
			(a) 75 DN	no	R
			(b) 63 DN	no	R
			(c) 50 DN	no	R
			(d) 40 DN	no	R
			(e) 32 DN	no	R
			(f) 25 DN	no	R
			(g) 20 DN	no	R
	3.3.3.2.2		Male Adaptor (BSP threaded)		
			(a) 75 DN x 65 BSP	no	R
			(b) 75 DN x 50 BSP	no	R
			(c) 63 DN x 50 BSP	no	R
			(d) 63 DN x 40 BSP	no	R
			(e) 50 DN x 50 BSP	no	R
			(f) 50 DN x 40 BSP	no	R
	(g) 40 DN x 50 BSP		no	R	
	(h) 40 DN x 50 BSP		no	R	
	(i) 40 DN x 32 BSP		no	R	
	(j) 32 DN x 32 BSP	no	R		
	(k) 32 DN x 25 BSP	no	R		
	(l) 25 DN x 25 BSP	no	R		
	(m) 25 DN x 20 BSP	no	R		
	(n) 20 DN x 25 BSP	no	R		
	(o) 20 DN x 20 BSP	no	R		
	(p) 20 DN x 15 BSP	no	R		
		SUBTOTAL CARRIED FORWARD		R	

SCHE- DULE NO.	PAY- MENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
3.3.32.3		Female Adaptor (BSP threaded) (a) 75 DN x 50 BSP (b) 63 DN x 50 BSP (c) 50 DN x 50 BSP (d) 40 DN x 32 BSP (e) 40 DN x 25 BSP (f) 32 DN x 25 BSP (g) 25 DN x 25 BSP (h) 25 DN x 20 BSP (i) 20 DN x 20 BSP (j) 20 DN x 15 BSP	no no no no no no no no no no	R R R R R R R R R R
3.3.32.4		Equal tee (a) 75 DN (b) 63 DN (c) 50 DN (d) 40 DN (e) 32 DN (f) 25 DN (g) 20 DN	no no no no no no no	R R R R R R R
3.3.3.2.5		Reducing tee (a) 75 x 63 DN (b) 63 x 50 DN (c) 50 x 40 DN (d) 40 x 32 DN (e) 32 x 25 DN (f) 25 x 20 DN	no no no no no no	R R R R R R
3.3.2.6		Tee with female thread (a) 75 DN x 65 BSP (b) 75 DN x 50 BSP (c) 63 DN x 50 BSP (d) 50 DN x 50 BSP (e) 50 DN x 50 BSP (f) 40 DN x 50 BSP (g) 40 DN x 40 BSP (h) 40 DN x 32 BSP (i) 40 DN x 25 BSP (j) 32 DN x 32 BSP (k) 32 DN x 25 BSP (l) 25 DN x 32 BSP (m) 25 DN x 25 BSP (n) 25 DN x 20 BSP (o) 25 DN x 15 BSP (p) 20 DN x 20 BSP (q) 20 DN x 15 BSP	no no no no no no no no no no no no no no no no no	R R R R R R R R R R R R R R R R
3.3.3.2.7		Male elbow (a) 63 DN x 50 BSP (b) 50 DN x 40 BSP (c) 40 DN x 32 BSP (d) 32 DN x 25 BSP (e) 25 DN x 20 BSP (f) 20 DN x 20 BSP (g) 20 DN x 15 BSP	no no no no no no no	R R R R R R R
3.3.3.2.8		Female elbow (a) 75 DN x 75 BSP (b) 74 DN x 65 BSP (c) 63 DN x 50 BSP (d) 50 DN x 50 BSP	no no no no	R R R R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAY- MENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
		(e) 50 DN x 40 BSP	no	R
		(f) 40 DN x 50 BSP	no	R
		(g) 40 DN x 40 BSP	no	R
		(h) 40 DN x 32 BSP	no	R
		(i) 32 DN x 25 BSP	no	R
		(j) 32 DN x 20 BSP	no	R
		(k) 25 DN x 25 BSP	no	R
		(l) 25 DN x 20 BSP	no	R
		(m) 20 DN x 20 BSP	no	R
		(n) 20 DN x 205 BSP	no	R
3.3.3.2.9		Elbow (90°)		
		(a) 75 DN	no	R
		(b) 63 DN	no	R
		(c) 50 DN	no	R
		(d) 40 DN	no	R
		(e) 32 DN	no	R
		(f) 25 DN	no	R
		(g) 20 DN	no	R
3.3.3.2.20 0		Reducers		
		(a) 75 x 63 DN	no	R
		(b) 75 x 50 DN	no	R
		(c) 63 x 50 DN	no	R
		(d) 63 x 50 DN	no	R
		(e) 63 x 40 DN	no	R
		(f) 50 x 40 DN	no	R
		(g) 50 x 32 DN	no	R
		(h) 50 x 25 DN	no	R
		(i) 40 x 32 DN	no	R
		(j) 40 x 25 DN	no	R
		(k) 32 x 25 DN	no	R
		(l) 32 x 20 DN	no	R
		(m) 25 x 20 DN	no	R
3.3.3.2.11		Polypropylene Saddle		
		(a) 75 DN x 25 BSP	no	R
		(b) 75 DN x 25 BSP	no	R
		(c) 75 DN x 15 BSP	no	R
		(d) 63 DN x 25 BSP	no	R
		(e) 63 DN x 25 BSP	no	R
		(f) 63 DN x 15 BSP	no	R
		(g) 50 DN x 25 BSP	no	R
		(h) 50 DN x 25 BSP	no	R
		(i) 50 DN x 25 BSP	no	R
		(j) 40 DN x 20 BSP	no	R
		(k) 40 DN x 15 BSP	no	R
		(l) 32 DN x 20 BSP	no	R
		(m) 32 DN x 15 BSP	no	R
		(n) 25 DN x 15 BSP	no	R
		(o) 20 DN x 15 BSP	no	R
3.4	SABS 1200L	VALVES		
3.4.1	8.2.3	Gate valves Gate valves, waterworks pattern in compliance with SABS 664, flanged, drilled to SABS 1123 table 1600/3, with resilient, rubberised metal gate, cap top, plan thrust collar, non-rising spindle, clockwise closing.		
		(a) 200 DN	no	R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAY- MENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
		(b) 150 DN	no	R
		(c) 100 DN	no	R
		(d) 80 DN	no	R
		(e) 65 DN	no	R
		(f) 50 DN	no	R
3.4.2		(Single orifice air valve (25 DN) installation, complete with chamber, as set out on plan 125 843/97 ME but excluding the in-line tee-piece	no	R
3.4.3		Double purpose air valve (50 DN) installation, complete, with chamber as set out on plan 125 844/97 ME but excluding the in-line-tee-piece	no	R
3.4.4		Single standpipe installation, complete with in-situ constructed concrete trough as set out on plan 125 836/97 ME, but excluding the mainline saddle.	no	R
3.4.5		Double standpipe installation, complete with in-situ constructed concrete trough as set out on plan 125 836/97 ME, but excluding the mainline saddle	no	R
3.4.6		Domestic draw-off with double outlet, complete with in-situ constructed concrete trough as set out on plan 125 837/97 ME, but excluding the mainline saddle.	no	R
3.5	SABS 1200L 8.2.11	ANCHOR/THRUST BLOCKS AND PEDESTALS		
3.5.1		Concrete thrust block, configuration as depicted on plan 125/839/97 ME, in the following sizes:		
		(a) Concrete volume < 0,4 m ³	no	R
		(b) Concrete volume 0,4 to 0,59 m ³	no	R
		(c) Concrete volume 0,6 to 0,79 m ³	no	R
		(d) Concrete volume 0,8 to 0,99 m ³	no	R
		(e) Concrete volume 1,0 to 1,19 m ³	no	R
		(f) Concrete volume 1,2 to 1,39 m ³	no	R
		(g) Concrete volume 1,4 to 1,6 m ³	no	R
3.5.2		Pipeline marker as depicted on plan 125 842/94 ME	no	R
3.6	SABS 1200L 8.2.15	SPECIAL WRAPPING		
		Wrapping of buried steel pipelines and connections with petrolatum mastic and impregnated tape in an over-the-trench operation, for the following pipe diameters:		
		(a) 200 DN	m	R
		(b) 150 DN	m	R
		(c) 100 DN	m	R
		(d) 80 DN	m	R
		(e) 65 DN	m	R
		(f) 50 DN	m	R
3.7		MARK-UP RATES		
3.7.1				
		SUBTOTAL CARRIED FORWARD		R

SCHEDULE NO.	PAY-MENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
3.7.2		(a) Percentage mark-up on rates listed on term contracts. (b) Percentage mark-up on items approved by the client or his representative with attached invoices for material used.	10% 10%	10% 10%
3.8		Tip trucks (a) 6 m ³ (b) 10 m ³	h h	R R
3.9		Flat bed trucks (a) 5t (b) 7t	km km	R R
3.10	PSA15	LDV (a) 2x4WD (b) 4x4WD	km km	R R
		TOTAL SCHEDULE 3 CARRIED FORWARD TO SUMMARY		R
Is offer strictly to specification Yes/No If not to specification, state deviation. Bidder name. Note: BID price must include value added tax.				

SCHEDULE 4: HANDPUMPS

VAT INCLUDED IN BID PRICE

SCHE- DULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
	PB5	Note: Supply & delivery of the equipment required for handpump installation according to Drg. No. 125 814/97 ME: Term Contract Rates are applicable.		
R	R	Complete installation and commissioning	m	R
R	R	(a) Helical Roter Positives Displacement + Vertical Hand Operated Type (various borehole depths).	m	R
R	R	(b) Positive Displacement Hand operated piston	m	R
R	R	Type (various borehole depths)	m	R
4.2		(a) Concrete pedestal for Helical positive Displacement vertical hand operated type including holding down bolts complete as per specification in accordance with drawing No.	1	R
		(b) Concrete pedestal for Positive Displacement hand operated piston type including holding down bolts complete as per specification in accordance with drawing No. 125 814/97 ME.	1	R
4.3		Removal of existing Handpump		R
4.4		Mark-up rates (a) Percentage mark-up on rates listed on term contracts (b) Percentage mark-up on items approved by the client or his representative with attached invoices for material used.	10% 10%	10% 10%
4.5		Tip trucks (a) 6 m ³ (b) 10 m ³	h h	R R
4.6		Flat bed trucks (a) 5t (b) 7t	km km	R R
4.7	PSA15	LDV (a) 2x4WD (b) 4x4WD	km km	R R
		TOTAL SCHEDULE 4 CARRIED FORWARD TO SUMMARY		R
Is offer strictly to specification Yes/No _____ If not to specification, state deviation. _____ Bidder name. _____ Note: BID price must include value added tax. _____				

SBD 3.2

SCHEDULE 5: WINDMILLS

VAT INCLUDED IN BID PRICE

SCHE- DULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
5.1	PB6	Supply and delivery of the equipment required for Windmills installation: Term Contract rates are applicable.		
		Excavation in the following materials for tower posts and borehole foundation blocks:		
		(a) Soft material	m ³	R
		(b) Extra over 5.2.1(a) in intermediate material	m ³	R
		(c) Extra over 5.2.1(a) in hard material	m ³	R
5.2		Concrete base and footings class 15/20	m ³	R
5.3		Complete installation of windmills (excluding column installation)		
		(a) 6 m tower	m	R
		(b) 9 m tower	m	R
		(c) 12 m tower	m	R
5.4		Complete installation of columns (various borehole depths)	m m m m m	R R R R R
5.5		Removal of existing Windmill		R
5.6		Mark-up rates		
		(a) Percentage mark-up on rates listed on term contracts	10%	10%
		(b) Percentage mark-up on items approved by the client or his representative with attached invoices for material used	10%	10%
5.7	PSA15	Tip trucks		
		(a) 6 m ³	h	R
		(b) 10 m ³	h	R
5.8		Flat bed trucks		
		(a) 5t	km	R
		(b) 7t	km	R
5.9		LDV		
		(a) 2x4WD	km	R
		(b) 4x4WD	km	R
		TOTAL SCHEDULE 5 CARRIED FORWARD TO SUMMARY		R
Is offer strictly to specification Yes/No If not to specification, state deviation. Bidder name. Note: BID price must include value added tax.				

SCHEDULE 6: PVC STORAGE TANK INSTALLATIONS

VAT INCLUDED IN BID PRICE

SCHE- DULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
6.		PVC STORAGE TANK INSTALLATIONS		
6.1	SABS 1200C	SITE CLEARANCE		
6.1.1	8.2.1	Clear and grub site	m ²	R
6.1.2	8.2.2	Remove and grub large trees and stumps of girth:		
		(a) Over 1 m and up to and including 2 m	no	R
		(b) Over 2 m and up to and including 3 m	no	R
6.1.3	8.2.4	Reclear surfaces (only on instructions from the Engineer)	m ²	R
6.1.4	8.2.7	Dismantle and remove pipelines with internal diameter up to 150 mm	m	R
6.1.5	8.2.8	Demolish and remove concrete structures:		
		(a) Unreinforced	m ³	R
		(b) Reinforced	m ³	R
6.1.6	8.2.9	Transport materials and debris to unspecified sites and dumps	m ³ /km	R
6.2	SABS 1200DA	EARTHWORKS (SMALL WORKS)		
6.2.1	8.3.2	Restricted excavation		R
		(a) Excavate for restricted foundations, footings, slabs and trenches in all materials and use for backfill or dispose	m ³	R
		(b) Extra-over item 20.2.1a for:		
		(i) Intermediate excavation	m ³	R
		(ii) Hard rock excavation	m ³	R
6.2.2	8.3.3	Overhaul		
		(a) Limited overhaul	m ³	R
		(b) Long overhaul	m ³ /km	R
6.2.3	8.3.4	Importing of materials from borrow pits	m ³	R
6.2.4	8.3.5	Topsoiling	m ²	R
6.3	SABS 1200GB	CONCRETE (ORDINARY BUILDINGS)		
6.3.1		Formwork		
6.3.1.1	8.2.1	(a) Rough		
		(i) Horizontal	m ²	R
		(ii) Vertical	m ²	R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAY- MENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
		(b) Normal		
		(i) Horizontal	m ²	R
		(ii) Vertical	m ²	R
		(c) Special smooth, rubbed		
		(i) Horizontal	m ²	R
		(ii) Vertical	m ²	R
6.3.1.2	8.2.2	Narrow widths		
		(a) Up to 300 mm	M	R
		(b) Exceeding 300 mm up to and including 600 mm	M	R
6.3.2	8.2.4	Reinforcement		
		(a) Mild steel bars	t	
		(b) High tensile steel bars	t	
		(c) Welded mesh		
		(i) ref. 193	m ²	R
		(ii) ref. 245	m ²	R
		(iii) ref. 395	m ²	R
6.3.3	8.2.5	Concrete		
6.3.3.1		Prescribed mix 1:3:6 (38)	m ³	R
6.3.3.2		Strength mix (general works)		
		(a) Class 15/19	m ³	R
		(b) Class 20/19	m ³	R
		(c) Class 25/19	m ³	R
		(d) Class 30/19	m ³	R
6.3.3.3		Strength mix Class 25/19, including formwork, floated surface finish and mesh reinforcement and mild steel anchors in accordance with plan 125 819/97 ME in 150 mm thick concrete slab for:		
		(a) One tank (2900 x 3000)	no	R
		(b) two tank (2900 x 5500)	no	R
		(c) three tank (2900 x 8000)	no	R
		(d) four tank (2900 x 10500)	no	R
6.3.3.4		Blinding layer in class 15/19 concrete and 50 mm thick	m ²	R
6.3.3.5	8.2.6	Unformed concrete surface finishes		
		(a) Wood-floated finish	m ²	R
		(b) Steel-floated finish	m ²	R
6.3.3.5		Brickwork (stretcherbond)		
		Foundation walling with clay bricks type NFX to SABS 227-1986 in:		
		(a) 230 mm walls	m ²	R
		(b) 345 mm walls	m ²	R
6.3.6		Extra-over item 20.3.5 for building in of miscellaneous walling materials:		
6.3.6.1		Brickforce in the following widths:		
		(a) 150 mm	m	R
		(b) 225 mm	m	R
6.4		Water tank (ground level installation)		
		10 000 ℓ polyethylene water tank (2980 mm high x 2 200 mm diameter) detailed as fitting "H" on plan 125 821/97 ME, supplied, installed and anchored	no	R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAY- MENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
6.5	SABS 1200L 8.2.2	PIPES AND FITTINGS (ground level installation) Supply, install and test the pipework and fittings scheduled on plan 125 821/97 ME for the following installation arrangements: (a) One tank (b) Two tank (c) Three tank (d) Four tank	set set set set	R R R R
6.6		WATER TANK (elevated installation) 10 000 ℓ polyethylene water tank (2980 mm high x 2200 mm diameter) detailed as fitting "W" on plan 125 821/97 ME, supplied, erected and anchored.	no	R
6.7	SABS 1200H	STEEL TANK STAND Supply and erect elevated tank stand in accordance with plan nos.: 125 823/97 ME, 125 924/97 ME, 125 825/97 ME, 125 826/97 ME (a) Painted (b) Hot dip galvanised	set set	R R
6.8	SABS 1200L 8.2.2	PIPES AND FITTINGS (elevated tank installation) Supply, install and test the pipework and fittings scheduled on plan 125 827/97 ME for the single tank installation	set	R
6.8.1				
6.8.2	8.2.2	Supply, install and test the pipework and fittings scheduled on plan 125 830/97 ME for the multiple tank installation: (a) Two tank arrangement (b) Three tank arrangement	set set	R R
6.9		MARK-UP RATES		
6.9.1		(a) Percentage mark-up on rates listed on term contracts	10%	10%
6.9.2		(b) Percentage mark-up on items approved by the client or his representative with attached invoices for material used.	10%	10%
6.10		Tip trucks (a) 6 m ³ (b) 10 m ³	h h	R R
6.11		Flat bed trucks (a) 5t (b) 7t	km km	R R
6.12	PSA15	LDV (a) 2x4WD (b) 4x4WD	km km	R R
		TOTAL SCHEDULE 6 CARRIED FORWARD TO SUMMARY		R
Is offer strictly to specification Yes/No _____ If not to specification, state deviation. _____ Bidder name. _____ Note: BID price must include value added tax. _____				

SCHEDULE 7: POSITIVE DISPLACEMENT BOREHOLE PUMPS, COLUMN AND ANCILLIARY PIPEWORK INSTALLATION

Note: Supply and delivery of components required for borehole installations: Term contract rates are applicable.

INSTALLATION REQUIREMENTS:

All according to Drg's No. 125 813/97 ME. (PB8)

VAT INCLUDED IN BID PRICE

Schedule No.	Description	Unit	Rate
7.1	Remove existing pump and pipe work		
7.1.1	Removal of columns diameter, 25 mm - 100 mm up to 120 m	m	R
7.2	Installation of existing pump and pipework (excl. probe pipe) including the supply and applying of the STAG compound.		
7.2.1	Installation of columns diameter, 25 mm to 100 mm up to 120 m	m	R
7.3	Probe pipes		
7.3.1	Supply 25 mm class 10 HDPF pipe	m	R
7.3.2	Rate charged per meter for installation of 25 mm, class 10 HDPF	m	R
7.3.3	Rate charged per meter for installation of two 25 mm pipes with heavy duty cable ties 7,5 mm (both)	m	R
7.4	Supply and installation of ancillary pipework according to Drawing No. 125 813/97 ME including non-return valve, flanged water meter, gate valves, pressure gauge and pipework.		
7.4.1	Complete 50 mm diameter installation	Set	R
7.4.2	Complete 65 mm diameter installation	Set	R
7.4.3	Complete 80 mm diameter installation	Set	R
7.4.4	Complete 100 mm diameter installation	Set	R
7.5	Name plates: Supply and installation of name plates according to Drg. No. 12581/97 ME	No.	R
	SUBTOTAL CARRIED FORWARD		R

Schedule No.	Description	Unit	Rate
	BROUGHT FORWARD		R
7.6	MARK-UP RATES		
7.6.1	Percentage mark-up on rates listed on term contracts	10%	10%
7.6.2	Percentage mark-up on items approved by the client or his representative with attached invoices for material used.	10%	10%
7.7	Tip trucks		
	(a) 6 m ³	h	R
	(b) 10 m ³	h	R
7.8	Flat bed trucks		
	(a) 5t	km	R
	(b) 7t	km	R
7.9	LDV		
	(a) 2x4WD	km	R
	(b) 4x4WD	km	R
	Total SCHEDULE 7 carried forward to Summary		R
Is offer strictly to specification Yes/No _____ If not to specification, state deviation. _____ Bidder name.. _____ Note: BID price must include value added tax. _____			

SCHEDULE 8: PUMPHOUSE INSTALLATION FOR BOREHOLES

Note: Supply and delivery of components required for borehole installations: Term contract rates are applicable.

VAT INCLUDED IN BID PRICE

SCHE- DULE' NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
8.		PUMPHOUSE INSTALALTION FOR BOREHOLES		
8.1	SABS 1200C	SITE CLEARANCE		
8.1.1	8.2.1	Clear and grub site	m ²	R
8.1.2	8.2.2	Remove and grub large trees and stumps of girth: (a) Over 1 m and up to and including 2 m (b) Over 2 m and up to and including 3 m	no no	R R
8.1.3	8.2.4	Reclear surfaces (only on instructions from the Engineer)	m ²	R
8.1.4	8.2.5	Take down existing fences (a) Stockproof fence (b) Security fence	m m	R R
8.1.5	8.2.7	Dismantle and remove pipelines with internal diameter up to 150 mm	m	R
8.1.6	8.2.8	Demolish and remove concrete structures: (a) Unreinforced (b) Reinforced	m ³ m ³	R R
8.1.7	8.2.9	Transport materials and debris to unspecified sites and dump	m ³ /km	R
8.2	SABS 1200 DA	EARTHWORKS (SMALL WORKS)		
8.2.1	8.3.2	Restricted excavation (a) Excavate for restricted foundations, footings and trenches in all materials and use for backfill or dispose. (b) Extra-over item 18.2.1a for: (i) intermediate excavation (ii) hard rock excavation	m ³ m ³ m ³	R R R
8.2.2	8.3.3	Overhaul (a) Limited overhaul (b) Long overhaul	m ³ /km m ³ /km	R R
8.2.3	8.3.4	Importing of materials from borrow pits	m ³	R
8.2.4	8.3.5	Topsoiling	m ²	R
8.3	SABS 1200GB	CONCRETE (ORDINARY BUILDINGS)		
8.3.1		Formwork		
8.3.1.1	8.2.1	(a) Rough (i) Horizontal (ii) Vertical	m ² m ²	R R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
		(b) Normal		
		(i) Horizontal	m ²	R
		(ii) Vertical	m ²	R
		(c) Special smooth, rubbed		
		(i) Horizontal	m ²	R
		(ii) Vertical	m ²	R
8.3.1.2	8.2.2	Narrow widths		
		(a) Up to 300 mm	m	R
		(b) Exceeding 300 mm up to and including 600 mm	m	R
8.3.2	8.2.4	Reinforcement		
		(a) Mild steel bars	t	R
		(b) High tensile steel bars	t	R
		(c) Welded mesh		
		(i) ref. 193	m ²	R
		(ii) ref. 245	m ²	R
		(iii) ref. 395	m ²	R
8.3.3	8.2.5	Concrete		
8.3.3.1		Prescribed mix 1:3:6 (38)	m ³	R
8.3.3.2		Strength mix (general works)		
		(a) Class 15/19	m ³	R
		(b) Class 20/19	m ³	R
		(c) Class 25/19	m ³	R
		(d) Class 30/19	m ³	R
8.3.3.3		Strength mix Class 25/19 to pumphouse floor, pump and engine foundations, in accordance with plan nos. 125 815/97 ME and 125 816/97 ME:		
		(a) Concrete floor 3000 x 3000 x 150 mm	no	R
		(b) Diesel engine foundation block (including formwork and anchor bolts)		
		(i) Size 2300 x 800 x 600 mm	no	R
		(ii) (Up to 5 kW max.)	no	R
		(iii) (From 6 kW to 25 kW)	no	R
		(c) Electric motor foundation block (including formwork and anchor bolts)		
		(i) Size 600 x 600 x 600 mm (up to 7 kW max.) (anchor bolts dia. M12 x 200 mm long)	no	R
		(ii) Size 800 x 800 x 600 mm (from 8 kW to 22 kW (5 anchor bolts dia M16 x 215 mm long)	no	R
8.3.3.4		Blinding layer in class 15/19 concrete and 50 mm thick	m ²	R
8.3.3.5	8.2.6	Unformed concrete surface finishes		
		(a) Wood-floated finish	m2	R
		(b) Steel-floated finish	m2	R
		(c) Power-floated finish	m2	R
8.4		BRICKWORK (strecherbond)		
8.4.1		Foundation walling with clay bricks type NFX to SABS 227-1986 in:		
		(a) 230 mm walls	m ²	R
		(b) 345 mm walls	m ²	R
8.4.2		Walling with clay stock bricks type NFP to SABS 227-1986 in:		
		(a) 115 mm walls	m ²	R
		(b) 230 mm walls	m ²	R
		(c) 345 mm walls	m ²	R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
		BROUGHT FORWARD		R
8.4.3		Walling with clay face bricks to SABS 227-1986 in:		
		(a) Type FBA		
		(i) 115 mm walls	m ²	R
		(ii) 230 mm walls	m ²	R
		(b) Type FBX		
		(i) 115 mm walls	m ²	R
		(ii) 230 mm walls	m ²	R
		(c) Type FBS		
		(i) 115 mm walls	m ²	R
		(ii) 230 mm walls	m ²	R
8.4.4		Extra-over items 18.4.1, 18.4.2 and 18.4.3 for building in of miscellaneous walling materials		
8.4.4.1		Brickforce in the following widths		
		(a) 75 mm	m	R
		(b) 150 mm	m	R
		(c) 225 mm	m	R
8.4.4.2		Wire ties		
		(a) Butterfly type wire tie	no	R
		(b) Modified PWD type wire tie	no	R
8.4.4.3		Mild steel (non-coiled) round bars		
		(a) 6 mm dia	m	R
		(b) 8 mm dia	m	R
8.4.4.4		Precast concrete lintels		
		(a) 110 mm wide	m	R
		(b) 225 x 50 mm cross section	m	R
		(c) 225 x 75 mm cross section	m	R
8.4.4.5		Damp proof sheeting to SABS 952-1985		
		(a) 375 micron polyolefin water proof sheeting under floor slabs and other positions instructed by the Engineer	m2	R
		(b) 375 micron polyolefin water proof sheeting in walls and window cills:		
		(i) 110 m wide	m	R
		(ii) 225 mm wide	m	R
		(iii) 375 mm wide	m	R
8.4.4.6		Soft board		
		(a) Plain		
		(i) 10 mm thick	m ²	R
		(ii) 13 mm thick	m ²	R
		(b) Bitumen impregnated		
		(i) 10 mm thick	m ²	R
8.4.4.7		Galvanised hoop iron	m	R
8.4.4.8		Galvanised wire		
		(a) 4 mm dia in 50 kg rolls	no	R
		(b) 3,15 mm dia in 50 kg rolls	no	R
8.4.5		Extra-over items 18.4.1, 18.4.2 and 18.4.3 for forming of wall joints		
		(a) 10 mm square raked joint, measured per square metre of walling	m ²	R
		(b) 10 mm square raked and tooled joint, measured per square metre of walling	m ²	R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.		PAYMENT REF.	DESCRIPTION	UNIT	RATE
8.5			BROUGHT FORWARD		R
8.5.1			MODULAR PUMPHOUSE Remove old pumphouse and store temporarily for re- installation	no	R
8.5.2			Install removal pump house	no	R
8.5.3			Supply and install complete new modular pumphouse in compliance with plan nos. 125 815/97 ME and 125 816/97 ME	no	R
8.5.4			Supply 50 mm padlock wit set of 3 keys	set	R
8.5.5			Supply and install precision made RSJ frame for pump and engine to plan 125 815/97 ME and 125 816/97 Me, complete with a anchor bolt (500 mm long with 100 mm hook, diameter M20)		
			(a) Small diesel engine - frame size 500 x 2100 x 350 mm	set	R
			(b) Medium engines - frame size 600 x 2100 x 350 mm	set	R
			(c) Large engines - frame size 1000 x 2100 x 650 mm	set	R
8.6			TAPSTANDS		
			(a) Stand pipes - single type to Drawing No. 125 836/97 ME	no	R
			(b) Stand pipes - double type to Drawing No. 125 836/97 ME	no	R
8.7			NAME PLATES Supply and installation of name plates according to Drg. No. 125 81/97 ME	set	R
8.8			(a) Percentage mark-up on rates listed on term contracts	10%	10%
			(b) Percentage mark-up on items approved by the client or his representative with attached invoices for material used	10%	10%
8.9			Tip trucks (a) 6 m ³ (b) 10 m ³	h h	
8.10			Flat bed trucks (a) 5t (b) 7t	km km	
8.11			LDV (a) 2x4WD (b) 4x4WD	km km	
TOTAL SCHEDULE 8 CARRIED FORWARD TO SUMMARY					R

SCHEDULE 9: SUBMERSIBLE PUMPS
VAT INCLUDED IN BID PRICE

SCHE- DULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
9.		SUBMERSIBLE PUMPS		
9.1	PB9 PB12 PD1-PD7	Supply and delivery of stainless steel centrifugal submersible borehole pumps and motors complete for the following duty points: Manufacturer: _____		
9.1.1		(a) Head = 70 m Flow = 0,2-1 m ³ /h for 30 m pump installation (Model: _____)	no	R
		(b) Head = 70 m Flow = 0,2-1 m ³ /h for 50 m pump installation (Model: _____)	no	R
9.1.2		(a) Head = 110 m Flow = 0,2-1,3 m ³ /h for 30 m pump installation (Model: _____)	no	R
		(b) Head = 110 m Flow = 0,2-1,3 m ³ /h for 50 m pump installation (Model: _____)	no	R
		(c) Head = 110 m Flow = 0,2-1,3 m ³ /h for 80 m pump installation (Model: _____)	no	R
9.1.3		(a) Head = 60 m Flow = 1-2,2 m ³ /h for 30 m pump installation (Model: _____)	no	R
		(b) Head = 60 m Flow = 1-2,2 m ³ /h for 50 m pump installation (Model: _____)	no	R
9.1.4		(a) Head = 110 m Flow = 1-2,2 m ³ /h for 30 m pump installation (Model: _____)	no	R
		(b) Head = 110 m Flow = 1-2,2 m ³ /h for 50 m pump installation (Model: _____)	no	R
		(c) Head = 110 m Flow = 1-2,2 m ³ /h for 80 m pump installation (Model: _____)	no	R
9.1.5		(a) Head = 50 m Flow = 1,6-3,6 m ³ /h for 30 m pump installation (Model: _____)	no	R
9.1.6		(a) Head = 80 m Flow = 1,6-3,6 m ³ /h for 30 m pump installation (Model: _____)	no	R
		(b) Head = 80 m Flow = 1,6-3,6 m ³ /h for 50 m pump installation (Model: _____)	no	R
9.1.7		(a) Head = 110 m Flow = 1,6-3,6 m ³ /h for 30 m pump installation (Model: _____)	no	R
		(b) Head = 110 m Flow = 1,6-3,6 m ³ /h for 50 m pump installation (Model: _____)	no	R
		(c) Head = 110 m Flow = 1,0-3,6 m ³ /h for 80 m pump installation (Model: _____)	no	R
		SUBTOTAL CARRIED FORWARD		R

SCHE- DULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
9.1.8	PB9 PB12 PD1-PD7	BROUGHT FORWARD (a) Head = 60 m Flow = 2,5-6 m ³ /h for 30 m pump installation (Model: _____) (b) Head = 60 m Flow = 2,5-6 m ³ /h for 50 m pump installation (Model: _____)	no	R R
9.1.9		(a) Head = 90 m Flow = 2,5-6 m ³ /h for 30 m pump installation (Model: _____) (b) Head = 90 m Flow = 2,5-6 m ³ /h for 50 m pump installation (Model: _____) (c) Head = 90 m Flow = 2,5-6 m ³ /h for 80 m pump installation (Model: _____)	no	R R R
9.1.10		(a) Head = 60 m Flow = 5-10 m ³ /h for 30 m pump installation (Model: _____) (b) Head = 60 m Flow = 5-10 m ³ /h for 50 m pump installation (Model: _____)	no	R R
9.1.11		(a) Head = 90 m Flow = 5-10 m ³ /h for 30 m pump installation (Model: _____) (b) Head = 90 m Flow = 5-10 m ³ /h for 50 m pump installation (Model: _____) (c) Head = 90 m Flow = 5-10 m ³ /h for 80 m pump installation (Model: _____)	no	R R R
9.2		Supply, delivery and installation of stainless steel centrifugal submersible borehole pumps and motors complete for the following duty points: Manufacturer: _____		R
9.2.1		(a) Head = 70 m Flow = 0,2-1 m ³ /h for 30 m pump installation (Model: _____) (b) Head = 70 m Flow = 0,2-1 m ³ /h for 50 m pump installation (Model: _____)	no	R R
9.2.2		(a) Head = 110 m Flow = 0,2-1,3 m ³ /h for 30 m pump installation (Model: _____) (b) Head = 110 m Flow = 0,2-1,3 m ³ /h for 50 m pump installation (Model: _____) (c) Head = 110 m Flow = 0,2-1,3 m ³ /h for 80 m pump installation (Model: _____)	no	R R R
9.2.3		(a) Head = 60 m Flow = 1-2,2 m ³ /h for 30 m pump installation (Model: _____) (b) Head = 60 m Flow = 1-2,2 m ³ /h for 50 m pump installation (Model: _____)	no	R R
9.2.4		(a) Head = 110 m Flow = 1-2,2 m ³ /h for 30 m pump installation (Model: _____) (b) Head = 110 m Flow = 1-2,2 m ³ /h for 50 m pump installation (Model: _____) (c) Head = 110 m Flow = 1-2,2 m ³ /h for 80 m pump installation (Model: _____)	no	R R R
		SUBTOTAL CARRIED FORWARD		R

SCHEDULE NO.	PAYMENT REF.	DESCRIPTION	UNIT	RATE
9.2.5		BROUGHT FORWARD (a) Head = 50 m Flow = 1,6-3,6 m ³ /h for 30 m pump installation (Model: _____)	no	R
9.2.6		(a) Head = 80 m Flow = 1,6-3,6 m ³ /h for 30 m pump installation (Model: _____)	no	R
		(b) Head = 80 m Flow = 1,6-3,6 m ³ /h for 50 m pump installation (Model: _____)	no	R
9.2.7		(a) Head = 110 m Flow = 1,6-3,6 m ³ /h for 30 m pump installation (Model: _____)	no	R
		(b) Head = 110 m Flow = 1,6-3,6 m ³ /h for 50 m pump installation (Model: _____)	no	R
		(c) Head = 110 m Flow = 1,0-3,6 m ³ /h for 80 m pump installation (Model: _____)	no	R
9.2.8		(a) Head = 60 m Flow = 2,5-6 m ³ /h for 30 m pump installation (Model: _____)	no	R
		(b) Head = 60 m Flow = 2,5-6 m ³ /h for 50 m pump installation (Model: _____)	no	R
9.2.9		(a) Head = 90 m Flow = 2,5-6 m ³ /h for 30 m pump installation (Model: _____)	no	R
		(b) Head = 90 m Flow = 2,5-6 m ³ /h for 50 m pump installation (Model: _____)	no	R
		(c) Head = 90 m Flow = 2,5-6 m ³ /h for 80 m pump installation (Model: _____)	no	R
9.2.10		(a) Head = 60 m Flow = 5-10 m ³ /h for 30 m pump installation (Model: _____)	no	R
		(b) Head = 60 m Flow = 5-10 m ³ /h for 50 m pump installation (Model: _____)	no	R
9.2.11		(a) Head = 90 m Flow = 5-10 m ³ /h for 30 m pump installation (Model: _____)	no	R
		(b) Head = 90 m Flow = 5-10 m ³ /h for 50 m pump installation (Model: _____)	no	R
		(c) Head = 90 m Flow = 5-10 m ³ /h for 80 m pump installation (Model: _____)	no	R
9.3		(a) Percentage mark-up on rates listed on term contracts	10%	10%
		(b) Percentage mark-up on items approved by the client or his representative with attached invoices for material used	10%	10%
9.4		Tip trucks (a) 6 m ³ (b) 10 m ³	h h	R R
9.5		Flat bed trucks (a) 5t (b) 7t	km km	R R
9.6		LDV (a) 2x4WD (b) 4x4WD	km km	R R
TOTAL SCHEDULE 8 CARRIED FORWARD TO SUMMARY				R
Is offer strictly to specification Yes/No _____				
If not to specification, state deviation. _____				
Bidder name _____				
Note: BID price must include value added tax. _____				

SCHEDULE 10 : ELECTRIC MOTORS

SCHE-DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT	RATE FOR ERECTION & REMAINING COMPONENT	COMBINED RATE (7) COLUMNS (4) + (5) + (6)
(1)	(2)	(3)	(4)	(5)	(6)	
10.1	Megger testing of electric motors between phases and between phase and frame (earth) & report findings to Department (per motor)	no	R	R	R	R
10.2	Disconnection and removal of electric motors and placing in store of Department or delivery to position required by Department for:					
10.2.1	Motors of 5,5 and 7,5 kW (per motor)	no	R	R	R	R
10.2.2	Motors of 11 and 15 kW (per motor)	no	R	R	R	R
10.2.3	Motors of 18,5 and 22 kW (per motor)	no	R	R	R	R
10.3	Installation and connection of existing motors for pumps, including shaft alignment of motor for V-belts or pump coupling for:					
10.3.1	Motors of 5,5 and 7,5 kW TEFC, foot mounted	no	R	R	R	R
10.3.2	Motors of 11 and 15 kW TEFC, foot mounted	no	R	R	R	R
10.3.3	Motors of 18,5 and 22 kW TEFC, foot mounted	no	R	R	R	R
10.3.4	Motors of 5,5 and 7,5 kW TEFC, flange mounted	no	R	R	R	R
10.3.5	Motors of 11 and 15 kW TEFC, flange mounted	no	R	R	R	R
Subtotal Carried forward						R

SCHE- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT(5)	RATE FOR ERECTION & REMAINING COMPONENT (6)	COMBINED RATE (7) COLUMNS (4) + (5) + (6)
(1)	(2)	(3)	(4)			
10.3.6	Brought Forward Motors of 18,5 and 22 kW TEFC, flange mounted	no	R	R	R	R
10.4	Supply, installation and connection of new motors for pumps, including shaft alignment of motor for V-belts or pump coupling for:					
10.4.1	5,5 kW, 380/220 V, TEFC, foot mounted	no	R	R	R	R
10.4.2	7,5 kW, 380/220 V, TEFC, foot mounted	no	R	R	R	R
10.4.3	11 kW, 380/220 V, TEFC, foot mounted	no	R	R	R	R
10.4.4	15 kW, 380/220 V, TEFC, foot mounted	no	R	R	R	R
10.4.5	18,5 kW, 380/220 V, TEFC, foot mounted	no	R	R	R	R
10.4.6	22 kW, 380/220 V, TEFC, foot mounted	no	R	R	R	R
10.4.7	5,5 kW, 380/220 V, TEFC, flange mounted	no	R	R	R	R
10.4.8	7,5 kW, 380/220 V, TEFC, flange mounted	no	R	R	R	R
10.4.9	11 kW, 380/220 V, TEFC, flange mounted	no	R	R	R	R
10.4.10	15 kW, 380/220 V, TEFC, flange mounted	no	R	R	R	R
10.4.11	18,5 kW, 380/220 V, TEFC, flange mounted	no	R	R	R	R
10.4.12	22 kW, 380/220 V, TEFC, flange mounted	no	R	R	R	R
10.5	Disconnection, removal and transport to re-winders, rewinding of existing motors, replacement of bearings, testing of motor in factory, installation of motor on site, connection of motor, alignment of motor shaft for V-belts or pump coupling, testing of motor on site and commissioning for:					
Subtotal Carried Forward						R

SCHE- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT (5)	RATE FOR ERECTION & REMAINING COMPONENT (6)	COMBINED RATE (7) COLUMNS (4) + (5) + (6)
(1)	(2)	(3)	(4)			
	Brought Forward					R
10.5.1	5,5 kW, 380/220 V, TEFC, foot mounted	no	R	R	R	R
10.5.2	7,5 kW, 380/220 V, TEFC, foot mounted	no	R	R	R	R
10.5.3	11 kW, 380/220 V, TEFC, foot mounted	no	R	R	R	R
10.5.4	15 kW, 380/220 V, TEFC, foot mounted	no	R	R	R	R
10.5.5	18,5 kW, 380/220 V, TEFC, foot mounted	no	R	R	R	R
10.5.6	22 kW, 380/220 V, TEFC, foot mounted	no	R	R	R	R
10.5.7	5,5 kW, 380/220 V, TEFC, flange mounted	no	R	R	R	R
10.5.8	7,5 kW, 380/220 V, TEFC, flange mounted	no	R	R	R	R
10.5.9	11 kW, 380/220 V, TEFC, flange mounted	no	R	R	R	R
10.5.10	15 kW, 380/220 V, TEFC, flange mounted	no	R	R	R	R
10.5.11	18,5 kW, 380/220 V, TEFC, flange mounted	no	R	R	R	R
10.5.12	22 kW, 380/220 V, TEFC, flange mounted	no	R	R	R	R
10.6	General Callout Rates					
10.6.1	(a) Normal hours	hour	R	R	R	R
10.6.2	(b) After hours	hour	R	R	R	R
10.7	Make-up rates					
10.7.1	(a) Percentage mark-up on rates listed on term contracts	10%				10%
Subtotal Carried Forward						R

SCHE- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT	RATE FOR ERECTION & REMAINING COMPONENT	COMBINED RATE
(1)	(2)	(3)	(4)	(5)	(6)	(7) COLUMNS (4) + (5) + (6)
10.7.2	BROUGHT FORWARD (b) Percentage mark-up on items (with attached invoices) approved by the Employer or his representative for materials, (other than those set out in this list) used in the execution of work ordered by the Employer	10%				R 10%
10.8	Tip trucks (a) 6 m ³ (b) 10 m ³	h h	R R	R R	R R	R R
10.9	Flat bed trucks (a) 5t (b) 7t	km km	R R	R R	R R	R R
10.10 PSA15	LDV (a) 2x4WD (b) 4x4WD	km km	R R	R R	R R	R R
TOTAL SCHEDULE 10 CARRIED FORWARD TO SUMMARY						R
Is offer strictly to specification Yes/No _____ Bidder name _____ If not to specification, state deviation. _____						
Note: BID price must include value added tax.						

SCHEDULE 11 : SMALL ELECTRICAL PANELS

SCHE- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT	RATE FOR ERECTION & REMAINING COMPONENT	COMBINED RATE (7) COLUMNS (4) + (5) + (6)
(1)	(2)	(3)	(4)	(5)	(6)	
11.1	<u>Testing of earthing installation for the electrical panel</u>					
11.1.1	Test earthing of distribution panel back to main earth point (per panel)	no	R	R	R	R
11.1.2	Testing of earth connections at light fittings, power point, motors and instrumentation (per circuit)	no	R	R	R	R
11.2	<u>Supply and installation of earthing materials to obtain proper earthing of installation from panel. Installation in conduit, wiring trunking, building trench or ground: (Excavations measured separately)</u>					
11.2.1	2,5 mm ² bare copper or insulated earth wire	m	R	R	R	R
11.2.2	4 mm ² bare copper or insulated earth wire	m	R	R	R	R
11.2.3	6 mm ² bare copper or insulated earth wire	m	R	R	R	R
11.2.4	10 mm ² bare copper or insulated earth wire	m	R	R	R	R
11.2.5	16 mm ² bare copper or insulated earth wire	m	R	R	R	R
11.2.6	25 mm ² bare copper or insulated earth wire	m	R	R	R	R
Subtotal Carried Forward						R

SCHE- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT (5)	RATE FOR ERECTION & REMAINING COMPONENT (6)	COMBINED RATE (7) COLUMNS(4)+(5)+(6)
(1)	(2)	(3)	(4)			
	Brought Forward					R
11.2.7	2,5 mm ² earth wire end, lugged and connected	no	R	R	R	R
11.2.8	4 mm ² earth wire end, lugged and connected	no	R	R	R	R
11.2.9	6 mm ² earth wire end, lugged and connected	no	R	R	R	R
11.2.10	10 mm ² earth wire end, lugged and connected	no	R	R	R	R
11.2.11	16 mm ² earth wire end, lugged and connected	no	R	R	R	R
11.2.12	25 mm ² earth wire end, lugged and connected	no	R	R	R	R
11.2.13	1,8 m copper clad steel core earth rod installed in ground, complete with clamp and connections (per earth assembly)	no	R	R	R	R
11.2.14	5 x 25 m copper earth strap installed on surface of structure or cable ladders, including fixings	m	R	R	R	R
11.3	<u>Supply and installation of 600/1 000 V, grade PVC PVC SWA PVC cable in trench or in ground.</u> Fixings or excavations as well as cable ends are measured elsewhere					
11.3.1	1,5 mm ² 3 or 4 core armoured	m	R	R	R	R
	2,5 mm ² 3 or 4 core armoured	m	R	R	R	R
	4 mm ² 4 core armoured	m	R	R	R	R
	6 mm ² 3 core armoured	m	R	R	R	R
	10 mm ² 4 core armoured	m	R	R	R	R
	16 mm ² 4 core armoured	m	R	R	R	R
Subtotal Carried Forward						R

SCHE- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT	RATE FOR ERECTION & REMAINING COMPONENT	COMBINED RATE
(1)	(2)	(3)	(4)	(5)	(6)	(7) COLUMNS (4) + (5) + (6)
	Brought Forward					R
	25 mm ² 3 core armoured	m	R	R	R	R
	35 mm ² 4 core armoured	m	R	R	R	R
11.4	<u>Supply and installation of 600/1 000 V, grade PVC PVC SWA PVC cable ends complete with lugs, connections to motor terminals, stub bars, small terminals, etc. (include for labels and testing)</u>					
11.4.1	1,5 mm ² 3 or 4 - core armoured	m	R	R	R	R
11.4.2	2,5 mm ² 3 or 4 - core armoured	m	R	R	R	R
11.4.3	1,5 mm ² 7 - core armoured	m	R	R	R	R
11.4.4	4 mm ² 4 - core armoured	m	R	R	R	R
11.4.5	6 mm ² 3 - core armoured	m	R	R	R	R
11.4.6	10 mm ² 4 - core armoured	m	R	R	R	R
11.4.7	16 mm ² 4 - core armoured	m	R	R	R	R
11.4.8	25 mm ² 3 - core armoured	m	R	R	R	R
11.4.9	35 mm ² 4 - core armoured	m	R	R	R	R
11.5	<u>Cable Trenches</u> Excavation, laying 150 mm bedding, backfilling in 150 mm layers, and stabilising to original of cable trench (600 mm wide x 1 m deep):					
11.5.1	Hard rock	m ³	R	R	R	R
11.5.2	Soft rock	m ³	R	R	R	R
Subtotal Carried Forward						R

SCHE- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT	RATE FOR ERECTION & REMAINING COMPONENT	COMBINED RATE
(1)	(2)	(3)	(4)	(5)	(6)	(7) COLUMNS (4) + (5) + (6)
	Brought Forward					R
11.5.3	Soil	m ³	R	R	R	R
11.6	<u>General maintenance of electrical equipment as per Section 3 of the maintenance specification:</u>					
11.6.1	Clean inside and outside of each panel (per panel)	no	R	R	R	R
11.6.2	Tighten all connections in panel (per panel)	no	R	R	R	R
11.6.3	Tighten connections in lock stop button box (per box)	no	R	R	R	R
11.6.4	Tighten connections in remote stop-start station box (per box)	no	R	R	R	R
11.6.5	Tighten connections in motor connection box, including thermal sensor wiring terminals (per box)	no	R	R	R	R
11.6.6	Tighten connections at instrument terminals (per instrument)	no	R	R	R	R
11.6.7	Repair ends of damaged conductors due to overheating at circuit breakers, contactors, overloads or motor terminals, including installation of ferrules, lugs, heatshrink materials or insulated sleeving:					
	(a) Conductor size up to 16 mm ² , per terminal	no	R	R	R	R
	(b) Conductor sizes from 25 mm ² to 50 mm ² per terminal	no	R	R	R	R
11.6.8	Testing of single phase or three phase earth leakage unit	no	R	R	R	R
Subtotal Carried Forward						R

SCHE- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT	RATE FOR ERECTION & REMAINING COMPONENT	COMBINED RATE (7) COLUMNS (4) + (5) + (6)
(1)	(2)	(3)	(4)	(5)	(6)	
11.6.9	Brought Forward Testing of under/over-voltage relay or phase monitor relay per unit	no	R	R	R	R
11.6.10	Checking of all voltmeters and voltmeter switches for correct operation (per panel)	no	R	R	R	R
11.6.11	Logging of all motor running hour meter readings and trip data of electronic motor protection units on a site (per site)	no	R	R	R	R
11.6.12	Checking of all indicator lamps on panel (per panel)	no	R	R	R	R
11.6.13	<u>Replacement of indicator lamps as follows:</u>					
	(a) Incandescent lamps (per lamp)	no	R	R	R	R
	(b) LED type removable lamp	no	R	R	R	R
	(c) LED type, whole unit	no	R	R	R	R
11.6.14	Checking of all instrumentation fuses on a site (per site)	no	R	R	R	R
11.6.15	<u>Replacement of blown fuses as follows:</u>					
	(a) HRC up to 10A	no	R	R	R	R
	(b) HRC above 10A and up to 32A	no	R	R	R	R
11.6.16	Checking of all lightning arrestors on a site (per site)	no	R	R	R	R
11.6.17	<u>Replacing of lightning arrestors as follows:</u>					
	(a) Power surge arrestors - MOV type - 40 kA fault rating	no	R	R	R	R
Subtotal Carried Forward						R

SCHE- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT	RATE FOR ERECTION & REMAINING COMPONENT	COMBINED RATE
(1)	(2)	(3)	(4)	(5)	(6)	(7) COLUMNS (4) + (5) + (6)
	Brought Forward					R
	(b) Power surge arrestors - MOV type - 65 kA fault rating	no	R	R	R	R
	(c) Power surge arrestors - MOV type - 100 kA fault rating	no	R	R	R	R
	(d) Instrument signal surge arrestor - MOV type - 10 kA fault rating	no	R	R	R	R
	(e) Instrument signal surge arrestor - MOV type - 5 kA fault rating	no	R	R	R	R
11.7	<u>Megger testing of 600/1 000 V cables</u> with both ends of cables disconnected for the following sizes of cables:					
	(a) Cables with 3 to 7 cores up to 2,5 mm ² , per cable	no	R	R	R	R
	(b) Cables with 3 to 4 cores from 4 mm ² to 25 mm ² , per cable	no	R	R	R	R
	(c) Cables with 3 - 4 cores from 35 mm ² to 50 mm ² , per cable	no	R	R	R	R
11.8	Supply and installation of PVC warning tape in top 300 mm of trench backfill	no	R	R	R	R
11.9	Supply and fitting of cable labels on ends of cable with strap-on type label with up to 10 digits on label (per label)	no	R	R	R	R
11.10	<u>Testing and checking of motors</u> , all sizes, and comparing current readings with current rating of motor and logging of data as follows per motor:	no	R	R	R	R
Subtotal Carried Forward						R

SCHE- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT	RATE FOR ERECTION & REMAINING COMPONENT	COMBINED RATE (7) COLUMNS (4) + (5) + (6)
(1)	(2)	(3)	(4)	(5)	(6)	
11.10.1	Brought Forward Megger between phases and phases to earth and log data (per motor)	no	R	R	R	R
11.11	Maintenance of panels , executing the following various tasks per unit of equipment:					
11.11.1	Inspecting of circuit breakers and testing to see that circuit breakers can handle the current of the particular circuit without tripping under normal load conditions and under transient conditions of motor starting for all sizes and types of circuit breakers, single pole and triple pole, as well as checking for overheating of circuit breakers (per panel)	no	R	R	R	R
11.11.2	Inspecting contactors and measuring outgoing voltages to determine if contactors are closing properly and that one or more phase contacts are not malfunctioning or that the contactor is not overheating (per contactor)	no	R	R	R	R
11.11.3	Checking that overloads are of correct rating and that setting is correct for the rating of the motor protected with overload. Also check for malfunctioning of overload and nuisance tripping as well as overheating of overloads. Check that overload is not set for "Auto" reset (per panel)	no	R	R	R	R
11.11.4	Checking and setting of star-delta starter for proper changeover of star-to-delta (per timer)	no	R	R	R	R
11.12	Equipment Supply, installation, connection, testing and commissioning of the following equipment for distribution boards or motor controls:					
11.12.1	100 A TP on-load isolator	no	R	R	R	R
Subtotal Carried Forward						R

SCHE- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT	RATE FOR ERECTION & REMAINING COMPONENT	COMBINED RATE (7) COLUMNS (4) + (5) + (6)
(1)	(2)	(3)	(4)	(5)	(6)	
	Brought Forward					R
11.12.2	100 - 250 A TP on-load isolator	no	R	R	R	R
11.12.3	10 - 10 A SP mcb (5 kA)	no	R	R	R	R
11.12.4	15 - 100 A TP mcb (5 kA)	no	R	R	R	R
11.12.5	125 - 250 A TP mcb (10 kA) (with replaceable trip unit)	no	R	R	R	R
11.12.6	<u>Replacing set of 3 contacts</u> in the following sizes of contactors:					
	(b) 5,5 kW AC-3 rating contactor	set	R	R	R	R
	(c) 7,5 kW AC-3 rating contactor	set	R	R	R	R
	(d) 11 kW AC-3 rating contactor	set	R	R	R	R
	(e) 15 kW AC-3 rating contactor	set	R	R	R	R
	(f) 18,5 kW AC-3 rating contactor	set	R	R	R	R
	(g) 22 kW AC-3 rating contactor	set	R	R	R	R
11.12.7	<u>Replacing coil</u> in the following sizes of contactors:					
	(a) 4 kW AC-3 rating contactor	no	R	R	R	R
	(b) 5,5 kW AC-3 rating contactor	no	R	R	R	R
	(c) 7,5 kW AC-3 rating contactor	no	R	R	R	R
	(d) 11 kW AC-3 rating contactor	no	R	R	R	R
	(e) 15 kW AC-3 rating contactor	no	R	R	R	R
Subtotal Carried Forward						R

SCH- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT	RATE FOR ERECTION & REMAINING COMPONENT	COMBINED RATE
(1)	(2)	(3)	(4)	(5)	(6)	(7) COLUMNS (4) + (5) + (6)
11.12.8	Brought Forward					R
	(f) 18,5 kW AC-3 rating contactor	no	R	R	R	R
	(g) 22 kW AC-3 rating contactor	no	R	R	R	R
	<u>Replacing of complete contactor</u> for the following sizes of contactors, inclusive of removal of old unit and all re-connections:					
	(a) 4 kW AC-3 rating contactor	no	R	R	R	R
	(b) 5,5 kW AC-3 rating contactor	no	R	R	R	R
	(c) 7,5 kW AC-3 rating contactor	no	R	R	R	R
	(d) 11 kW AC-3 rating contactor	no	R	R	R	R
	(e) 15 kW AC-3 rating contactor	no	R	R	R	R
	(f) 18,5 kW AC-3 rating contactor	no	R	R	R	R
11.12.9	(g) 22 kW AC-3 rating contactor	no	R	R	R	R
	<u>Replacing of adjustable overloads</u> on contactors for the following sizes:					
	(a) 8 - 18 A	set	R	R	R	R
	(b) 17 - 40 A	set	R	R	R	R
	(c) 38 - 63 A	set	R	R	R	R
Subtotal Carried Forward						R

SCHE- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT	RATE FOR ERECTION & REMAINING COMPONENT	COMBINED RATE (7) COLUMNS (4) + (5) + (6)
(1)	(2)	(3)	(4)	(5)	(6)	
11.12.10	Brought Forward <u>Replace star-delta timer</u> for starter contactors as follows:					R
	(a) Electronic type	no	R	R	R	R
	(b) Magnetic type	no	R	R	R	R
	(c) Vacuum type	no	R	R	R	R
11.13	<u>As-built drawings</u> Drawing up and delivery of five sets of "As Built" drawings of panel to the Department for the following:					
11.13.1	12-way power distribution board (per board)	no	R	R	R	R
11.13.2	24-way power distribution board (per board)	no	R	R	R	R
11.13.3	Motor supply panel with main incoming panel and up to 2 starters (per panel)	no	R	R	R	R
11.13.4	Motor control centre with main incoming panel and up to 4 starters (per MCC)	no	R	R	R	R
11.14	<u>General call out rates</u>	hour	R	R	R	R
11.14.1	Normal hours	hour	R	R	R	R
11.14.2	After hours	hour	R	R	R	R
11.15	Mark-up rates					
11.15.1	Percentage mark-up on rates listed on term contracts	10%	10%			10%
Subtotal Carried Forward						R

SCHE- DULE NO.	DESCRIPTION	UNIT	RATE FOR CHECKING AND TESTING	RATE FOR MANUFACTURE & DELIVERY COMPONENT	RATE FOR ERECTION & REMAINING COMPONENT	COMBINED RATE
(1)	(2)	(3)	(4)	(5)	(6)	(7) COLUMNS (4) + (5) + (6)
11.15.2	Brought Forward Percentage mark-up on items (with attached invoices) approved by the Employer or his representative for materials, (other than those set out in this list) used in the execution of work ordered by the Employer	10%				R 10%
11.16	Tip trucks (a) 6 m ³ (b) 10 m ³	h h	R R	R R	R R	R R
11.17	Flat bed trucks (a) 5t (b) 7t	km km	R R	R R	R R	R R
11.18	LDV (a) 2x4WD (b) 4x4WD	km km	R R	R R	R R	R R
TOTAL SCHEDULE 11 CARRIED FORWARD TO SUMMARY						R
Is offer strictly to specification						
Bidder name.						
If not to specification, state deviation.						
Note: BID price must include value added tax.						

SCHEDULE 12: DIESEL ENGINES: LISTER LT1

NOTE: SUPPLY AND DELIVERY OF DIESEL ENGINES AND ACCESSORIES: TERM CONTRACT RATES ARE APPLICABLE

12.1 DIESEL ENGINE LISTER LT-1: SERVICE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
12.1.1	Fuel Filter	201-13117	Part	1	R
12.1.2	Oil Filter	N/A	Part	1	R
12.1.3	Air Filter	601-31350	Part	1	R
12.1.4	Labour		Hour		R
12.1.5	Lubrication		Sum		R
12.1.6	W/Shop Cons		Sum		R
	SUBTOTAL	CARRIED FORWARD		R	

12.2 NEW DIESEL ENGINE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
12.2.1	2.3 kW to 5 kW complete with Clutch (two groove) @1000 RPM			1	
	SUBTOTAL	CARRIED FORWARD		R	

12.3 CLUTCHES

CLUTCHES (Overhaul clutch) BROUGHT FORWARD					
SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
12.3.1	Material used				
12.3.2	Shoes	125-1003	Part	2	R
12.3.3	Springs	125-1201 (1000RPM)	Part	2	R
12.3.4	Workshop Labour		Hour	1	R
12.3.5	New clutch (two groove)		Part	1	R
	SUBTOTAL				R

12.4 MARK-UP RATES

12.4.1	Percentage mark-up on rates listed on term contracts	10%	10%	R
12.4.2	Percentage mark-up on items approved by the client or his representative with attached invoices for material used	10%	10%	R
12.5	Tip trucks			
	(a) 6 m ³	h	1	R
	(b) 10 m ³	h	1	R
12.6	Flat bed trucks			
	(a) 5t	km	1	R
	(b) 7t	km	1	R
12.7	LDV			
PSA12	(a) 2x4WD	km	1	R
	(b) 4x4WD	km	1	R
TOTAL SCHEDULE 12 CARRIED FORWARD TO SUMMARY				R
Is offer strictly to specification Yes/No _____ If not to specification, state deviation. _____ Bidder name _____ Note: BID price must include value added tax. _____				

SCHEDULE 13: DIESEL ENGINES: LISTER TS1

NOTE: SUPPLY AND DELIVERY OF DIESEL ENGINES AND ACCESSORIES: TERM CONTRACT RATES ARE APPLICABLE

13.1 DIESEL ENGINE LISTER TS1: SERVICE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
13.1.1	Fuel Filter	751-18100	Part	1	R
13.1.2	Oil Filter	201-55370	Part	1	R
13.1.3	Air Filter	366-06227	Part	1	R
13.1.4	Labour		Hour		R
13.1.5	Lubrication		Sum		R
13.1.6	W/Shop Cons		Sum		R
	SUBTOTAL	CARRIED FORWARD		R	

13.2 DIESEL ENGINE LISTER TS1: NEW DIESEL ENGINE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
13.2.1	6kW complete with Clutch (two groove) @1000 RPM			1	
	SUBTOTAL	CARRIED FORWARD		R	

13.3 CLUTCHES

CLUTCHES (Overhaul clutch) BROUGHT FORWARD					
SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
13.3.1	Material used				
13.3.2	Shoes	125-1003	Part	2	R
13.3.3	Springs	125-1201 (1000RPM)	Part	2	R
13.3.4	Workshop Labour		Hour	1	R
13.3.5	New clutch (two groove)		Part	1	R
	SUBTOTAL				R

13.4 MARK-UP RATES

13.4.1	Percentage mark-up on rates listed on term contracts	10%	10%	R
13.4.2	Percentage mark-up on items approved by the client or his representative with attached invoices for material used	10%	10%	R
13.5	Flat bed truck (a) 5t (b) 7t	km km	1 1	R R
13.6 PSA`4	LDV (a) 2 x 4WD (b) 4 x 4WD	km km	1 1	R R
Total SCHEDULE 13 carried forward to Summary			R	

Is offer strictly to specification

Yes/No

Bidder name.

If not to specification, state deviation.

Note: BID price must include value added tax.

SCHEDULE 14: DIESEL ENGINES: LISTER TS2

NOTE: SUPPLY AND DELIVERY OF DIESEL ENGINES AND ACCESSORIES: TERM CONTRACT RATES ARE APPLICABLE

14.1 DIESEL ENGINE LISTER TS2: SERVICE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
14.1.1	Fuel Filter	751-18100	Part	1	R
14.1.2	Oil Filter	201-55370	Part	1	R
14.1.3	Air Filter	366-06227	Part	1	R
14.1.4	Labour		Hour		R
14.1.5	Lubrication		Sum		R
14.1.6	W/Shop Cons		Sum		R
	SUBTOTAL	CARRIED FORWARD		R	

14.2 DIESEL ENGINE LISTER TS2: NEW DIESEL ENGINE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
14.2.1	12kW to 15kW complete with Clutch (two groove) @1000 RPM			1	
	SUBTOTAL	CARRIED FORWARD			R

14.3 DIESEL ENGINE LISTER TS2: CLUTCHES

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE PER PART
	CLUTCHES:	BROUGHT FORWARD			R
	Overhaul Clutch				
14.3.1	Material used				
14.3.2	Shoes	125-1090	Part	2	R
14.3.3	Springs	125-1201 (1000RPM)	Part	2	R
14.3.4	Workshop labour		Hour	1	R
14.3.5	New clutch (two groove)		Part	1	R
	SUBTOTAL				R

14.4 MARK-UP RATES

14.4.1	Percentage mark-up on rates listed on term contracts	10%	10%	R
14.4.2	Percentage mark-up on items approved by the client or his representative with attached invoices for material used	10%	10%	R
14.5	Flat bed trucks			
	(a) 5t	km	1	R
	(b) 7t	km	1	R
14.6	LDV			
PSA14	(a) 2x4WD	km	1	R
	(b) 4x4WD	km	1	R
TOTAL SCHEDULE 14 CARRIED FORWARD TO SUMMARY				R
Is offer strictly to specification Yes/No _____				
Bidder name. _____				
If not to specification, state deviation. _____				
Note: BID price must include value added tax. _____				

SCHEDULE 15: DIESEL ENGINES: LISTER TS3

NOTE: SUPPLY AND DELIVERY OF DIESEL ENGINES AND ACCESSORIES: TERM CONTRACT RATES ARE APPLICABLE

15.1 DIESEL ENGINE LISTER TS3: SERVICE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
15.1.1	Fuel Filter	751-18100	Part	1	R
15.1.2	Oil Filter	201-55370	Part	1	R
15.1.3	Air Filter	366-07188	Part	1	R
15.1.4	Labour		Hour		R
15.1.5	Lubrication		Sum		R
15.1.6	W/Shop Cons		Sum		R
	SUBTOTAL	CARRIED FORWARD			R

15.2 DIESEL ENGINE LISTER TS3: NEW DIESEL ENGINE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
	PARTS:	BROUGHT FORWARD			R
15.2.1	19kW to 22kW complete with Clutch (two groove) @1000 RPM			1	
	SUBTOTAL	CARRIED FORWARD			R

15.3 DIESEL ENGINE LISTER TS3: CLUTCHES

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE PER PART
	CLUTCHES:				
	Overhaul clutch				
15.3.1	Material used				
15.3.2	Shoes	125-1090	Part	2	R
15.3.3	Springs	125-1201 (1000RPM)	Part	2	R
15.3.4	Workshop labour		Hour	1	R
15.3.5	New clutch (two groove)		Part	1	R
	SUBTOTAL			R	

15.4 MARK-UP RATES

15.4.1	Percentage mark-up on rates listed on term contracts	10%	10%	R
15.4.2	Percentage mark-up on items approved by the client or his representative with attached invoices for material used	10%	10%	R
15.5	Flat bed trucks			
	(a) 5t	km	1	R
	(b) 7t	km	1	R
15.6	LDV			
PSA15	(a) 2x4WD	km	1	R
	(b) 4x4WD	km	1	R
	TOTAL SCHEDULE 15 CARRIED FORWARD TO SUMMARY			R
Is offer strictly to specification Yes/No _____ Bidder name. _____ If not to specification, state deviation. _____ Note: BID price must include value added tax. _____				

SCHEDULE 16: DIESEL ENGINES: HATZ 2G40

NOTE: SUPPLY AND DELIVERY OF DIESEL ENGINES AND ACCESSORIES: TERM CONTRACT RATES ARE APPLICABLE

16.1 DIESEL ENGINE HATZ 2G40: SERVICE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
16.1.1	Fuel Filter	40089401	Part	1	R
16.1.2	Oil Filter	50302800	Part	1	R
16.1.3	Air Filter	Oil bath	Part	1	R
16.1.4	Labour		Hour		R
16.1.5	Lubrication		Sum		R
16.1.6	W/Shop Cons				
	SUBTOTAL	CARRIED FORWARD			R

16.2 DIESEL ENGINE HATZ 2G40: NEW DIESEL ENGINE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
	PARTS:	BROUGHT FORWARD			R
16.2.1	2.3 kW to 5 kW complete with Clutch (two groove) @1000 RPM		1		
	SUBTOTAL	CARRIED FORWARD			R

16.3 DIESEL ENGINE HATZ 2G40: CLUTCHES

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
	CLUTCHES:				
	Overhaul Clutch				
16.3.1	Material used				
16.3.2	Shoes		Part	2	R
16.3.3	Springs		Part	2	R
16.3.4	Workshop Labour		Hour	1	R
16.3.5	New clutch		Part	1	R
	SUBTOTAL				R

16.4 MARK-UP RATES

16.4.1	Percentage mark-up on rates listed on term contracts	10%	10%	R
16.4.2	Percentage mark-up on items approved by the client or his representative with attached invoices for material used	10%	10%	R
16.5	Flat bed trucks			
	(a) 5t	km	1	R
	(b) 7t	km	1	R
16.6	LDV			
PSA16	(a) 2x4WD	km	1	R
	(b) 4x4WD	km	1	R
TOTAL SCHEDULE 16 CARRIED FORWARD TO SUMMARY				R
Is offer strictly to specification Yes/No _____				
Bidder name. _____				
If not to specification, state deviation. _____				
Note: BID price must include value added tax. _____				

SCHEDULE 17: DIESEL ENGINES: HATZ Z790

NOTE: SUPPLY AND DELIVERY OF DIESEL ENGINES AND ACCESSORIES: TERM CONTRACT RATES ARE APPLICABLE

17.1 DIESEL ENGINE HATZ Z790: SERVICE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
17.1.1	Fuel Filter	40089401	Part	1	R
17.1.2	Oil Filter	40038100	Part	1	R
17.1.3	Air Filter	Oil bath – can be cleaned	Part	1	R
17.1.4	Labour		Hour		R
17.1.5	Lubrication		Sum		R
17.1.6	W/Shop Cons		Sum		R
	SUBTOTAL CARRIED FORWARD				R

17.2 DIESEL ENGINES HATZ Z790: NEW DIESEL ENGINE

ITEM NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
	PARTS:	BROUGHT FORWARD			R
17.2.1	6kW complete with Clutch (two groove) @1000 RPM			1	
	SUBTOTAL				R

17.3 DIESEL ENGINES Z790: CLUTCHES

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
	CLUTCHES:	BROUGHT FORWARD			R
	Overhaul Clutch				
17.3.1	Material used				
17.3.2	Shoes		Part	2	R
17.3.3	Springs		Part	2	R
17.3.4	Workshop Labour		Hour		R
17.3.5	New clutch		Part	1	R
	SUBTOTAL				R

17.4 MARK-UP RATES

17.4.1	Percentage mark-up on rates listed on term contracts	10%	10%	R
17.4.2	Percentage mark-up on items approved by the client or his representative with attached invoices for material used	10%	10%	R
17.5	Flat bed trucks (a) 5t (b) 7t	km km	1 1	R R
17.6 PSA17	LDV (a) 2x4WD (b) 4x4WD	km km	1 1	R R
TOTAL SCHEDULE 17 CARRIED FORWARD TO SUMMARY				R
Is offer strictly to specification Yes/No _____ Bidder name. _____ If not to specification, state deviation. _____ Note: BID price must include value added tax. _____				

SCHEDULE 18: DIESEL ENGINES: HATZ 81S

NOTE: SUPPLY AND DELIVERY OF DIESEL ENGINES AND ACCESSORIES: TERM CONTRACT RATES ARE APPLICABLE

18.1 DIESEL ENGINE HATZ 81S: SERVICE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
18.1.1	Fuel Filter	40089401	Part	1	R
18.1.2	Oil Filter	1480000	Part	1	R
18.1.3	Air Filter	40084500	Part	1	R
18.1.4	Labour		Hour		R
18.1.5	Lubrication		Sum		R
18.1.6	W/Shop Cons		Sum		R
	SUBTOTAL	CARRIED FORWARD			R

18.2 DIESEL ENGINE HATZ 81S: NEW DIESEL ENGINE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
	PARTS:	BROUGHT FORWARD			R
18.2.1	12kW to 15kW complete with Clutch (two groove) @1000 RPM			1	
	SUBTOTAL	CARRIED FORWARD			R

18.3 DIESEL ENGINE HATZ 81S: CLUTCHES

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
	CLUTCHES (Overhaul clutch)				
18.3.1	Material used				
18.3.2	Shoes		Part	2	R
18.3.3	Springs		Part	2	R
18.3.4	Workshop Labour		Hour		
18.3.5	New clutch		Part	1	R
	SUBTOTAL				R

18.4 MARK-UP RATES

18.4.1	Percentage mark-up on rates listed on term contracts	10%	10%	R
18.4.2	Percentage mark-up on items approved by the client or his representative with attached invoices for material used	10%	10%	R
189.5	Flat bed trucks			
	(a) 5t	km	1	R
	(b) 7t	km	1	R
18.6	LDV			
PSA18	(a) 2x4WD	km	1	R
	(b) 4x4WD	km	1	R
	TOTAL SCHEDULE 18 CARRIED FORWARD TO SUMMARY			R
Is offer strictly to specification Yes/No _____ Bidder name. _____ If not to specification, state deviation. _____ Note: BID price must include value added tax. _____				

SCHEDULE 19: DIESEL ENGINES: HATZ 2M41

NOTE: SUPPLY AND DELIVERY OF DIESEL ENGINES AND ACCESSORIES: TERM CONTRACT RATES ARE APPLICABLE

19.1 DIESEL ENGINE HATZ 2M41: SERVICE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
19.1.1	Fuel Filter	50251500	Part	1	R
19.1.2	Oil Filter	40065300	Part	1	R
19.1.3	Air Filter	00952900	Part	1	R
19.1.4	Labour		Hour	2	R
19.1.5	Lubrication		Sum		R
19.1.6	W/Shop Cons		Sum		R
	SUBTOTAL	CARRIED FORWARD			R

19.2 DIESEL ENGINE HATZ 2M41: NEW DIESEL ENGINE

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
	PARTS:	BROUGHT FORWARD			R
19.2.1	19kW to 22kW complete with Clutch (two groove) @ 1000 RPM			1	
	SUBTOTAL	CARRIED FORWARD			R

19.3 DIESEL ENGINE HATZ 2M41: CLUTCHES

SCHEDULE NO.	DESCRIPTION	PART NUMBER (TERM CONTRACT)	UNIT	QTY	RATE
	CLUTCHES (Overhaul clutch)				
19.3.1	Material used				
19.3.2	Shoes		Part	2	R
19.3.3	Springs		Part	2	R
19.3.4	Workshop labour		Hour		R
19.3.5	New clutch		Part	1	R
	SUBTOTAL				R

19.4 MARK-UP RATES

19.4.1	Percentage mark-up on rates listed on term contracts	10%	10%	R
19.4.2	Percentage mark-up on items approved by the client or his representative with attached invoices for material used	10%	10%	R
19.5	Flat bed trucks			
	(a) 5t	km	1	R
	(b) 7t	km	1	R
19.6	LDV			
PSA19	(a) 2x4WD	km	1	R
	(b) 4x4WD	km	1	R
TOTAL SCHEDULE 19 CARRIED FORWARD TO SUMMARY				R
Is offer strictly to specification Yes/No _____				
Bidder name. _____				
If not to specification, state deviation. _____				
Note: BID price must include value added tax. _____				

PRICING SCHEDULE SUMMARY

The bidder's offer for this contract shall be tabled as follows:

SCHEDULE NO.	DESCRIPTION	QUANTITY	UNIT PRICE (EXCLUDING VAT)
1.	General (Rate Only) compulsory to complete in full		R
2.	Day works (Rate Only) compulsory to complete in full		R
3.	Small diameter Clearwater supply pipelines		R
4.	Hand pumps		R
5.	Windmills		R
6.	PVC storage tank installations		R
7.	Positive displacement borehole pumps, column and ancillary pipework installation		R
8.	Pump house installation for boreholes		R
9.	Submersible pumps		R
10.	Electric motors		R
11.	Small electrical panels		R
12.	Diesel engines: Lister LT1		R
13.	Diesel engines: Lister TS1		R
14.	Diesel engines: Lister TS2		R
15.	Diesel engines: Lister TS3		R
16.	Diesel engines: Hatz 2G40		R
17.	Diesel engines: Hatz Z790		R
18.	Diesel engines: Hatz 815		R
19.	Diesel engines: Hatz 2M41		R
	Total (item 1-19) excluding VAT		R
	14% Value Added Tax		R
	Total (item 1-19) including VAT		R

IMPORTANT NOTE: TOTAL (ITEM 1-19) INCLUDING VAT FORWARD TO FORM SBD 1 AND SBD 3.2.

BID NO. DWS 52-0816 WTE
RURAL COMMUNITY WATER SUPPLY AND SERVICES
EQUIPPING OF BOREHOLES NATIONWIDE
SECTION 5
PRICE SCHEDULES

STATED PROVINCE ACCORDING TO BIDDER PRIORITY (Gauteng, Western Cape, Eastern Cape, Limpopo, Free State, Northern Cape, North West, Kwa-Zulu Natal, Mpumalanga)

- | | | |
|----------|----------|----------|
| 1. _____ | 2. _____ | 3. _____ |
| 4. _____ | 5. _____ | 6. _____ |
| 7. _____ | 8. _____ | 9. _____ |

BIDDER NAME: _____

CONTRACTOR: _____ SIGNATURE: _____

DATE: _____