PROVINCIAL ADMINISTRATION OF KWAZULU-NATAL
DEPARTMENT OF PUBLIC WORKS

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

BILLS OF QUANTITIES

with GCC for Construction Works - Second Edition 2010

RETURNABLE DOCUMENT

ONE VOLUME APPROACH

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

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Employer:
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PIETERMARITZBURG
3200
Tel Number: 033 - 8971300
Fax Number: 033 - 8971399

Region:
Regional Manager
KZN Department of Public Works
X9041
Pietermarizburg
3200
Tel Number: 033-897 1421/1422
Fax Number: 033-897 1399

Tender Number:	ZNTM01130W	Project Code:	073636
CIDB Grading:	6EP or higher	Document Date:	9-Dec-2026
ECDP Number:	N/A	Contract Period:	9 Calendar Months

Contracting Party: _____

CIDB Registration number: _____

Central Suppliers Database Registration Number: _____

PROVINCIAL ADMINISTRATION OF KWAZULU-NATAL
DEPARTMENT OF PUBLIC WORKS

BILLS OF QUANTITIES

FOR

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

Civil Engineer

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admin@mapafrica.co.za

[Identify Agent's Service, eg. Engineer]

[Agents Name]
[P.O. Box number]
[Name of town]
[Code]
Tel Number [Tel Number including Area
Fax Number [Fax Number including Area
[Email Address]

Employer

Head: Public Works
KZN Department of Public Works
Private Bag X 9041
PIETERMARITZBURG
3200
Tel Number: 033 - 8971300
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Region

Regional Manager
KZN Department of Public Works
X9041
Pietermarizburg
3200
Tel Number: 033-897 1421/1422
Fax Number: 033-897 1399

Tender Number: **ZNTM01130W**

Project Code: **073636**

CIDB Grading: **6EP or higher**

Document Date: **46365**

ECDP Number: **N/A**

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

THE TENDER

1. PART T1: TENDER PROCEDURES

		Page No.
T1.1	Tender Notice and Invitation to Tender	9 - 12
PA-04.1	Summary for tender opening	13
T1.2	Tender Data	14-19
T1.3	Annexure C - Standard Conditions of Tender	20-29

2. PART T2: RETURNABLE DOCUMENTS

T2.1	List of Returnable Documents	30-32
T2.2	Authority to Sign Tender (T2.2)	33
T2.3	Authority for Consortia or Joint Venture's to Sign Tender (T2.3)	34-35
T2.4	Special Resolution of Consortia or Joint Venture's (T2.4)	36-38
T2.5	Joint Venture Involvement Declaration (T2.5)	39-40
T2.6	Schedule of Proposed Sub-Contractors (T2.6)	41
T2.7	Capacity of Tenderer (T2.7)	42-47
T2.8	Financial Standing and other resources of Business Declaration (T2.8)	48
T2.9	Preference Points Claim Form (T2.9)	49-50
T2.10	Site Inspection Certificate as proof for attendance of compulsory briefing meeting (T2.10)	51
T2.11	Bidder's Disclosure - SBD 4 (T2.11)	52-53
T2.12	Record of Addenda to Tender Documents (T2.12)	54
T2.13	Particulars of Electrical Contractor (T2.13)	55
T2.14	Schedule of Imported Materials and Equipment (T2.14)	56
T2.15a	Annual Financial Statement for past financial year (2.15)	57
T2.16	Equipment Schedules (T2.16)	58-62
T2.17	Contractor's Safety, Health and Environmental Declaration (T2.17)	63
T2.18	Compulsory Enterprise Questionaire (T2.18)	64
T2.19	Tax Compliance Status (TCS) PIN to verify on line Compliance Supplier Status via e-Filing (T2.19)	65
T2.20	Proof of Good Standing With the Compensation Commissioner (T2.20)	66
T2.21	Form of Offer and Acceptance (Bound into Section 1 of 2) (T2.21)	67-69
T2.21a	Confirm Receipt of Offer and Acceptance (T2.21a)	70
T2.22	Final Bill of Quantity (T2.22)	71
T2.23	Certified Proof of Paid Municipal Rates and Taxes (Attach) (T2.23)	72
T2.24	Proof of Unemployment Insurance Fund (2.24)	73
T2.25	The National Industrial Participation Programme (T2.25)	74-75
T2.26	Proof of Registration on the Central Supplier Database (CSD) (T2.26)	76

T2.27	Certified Proof of CIDB Registration Number (T2.27)	77
T2.28	Proof of Deposit (T.28)	78
T2.29	Contract Form - Purchase of Goods/Works - Part 1 (T2.29)	79
T2.30	Contract Form - Purchase of Goods/Works - Part 2 (T2.30)	80
T2.31	OHSE Plan Structure (T2.31)	81
T2.32	Client's specific requirements for the Contractor's detailed OHSE Plan (T2.32)	82
T2.33	Baseline Risk Assessment (T2.33)	83
T2.34	Functionality Criteria (T2.34)	84-86
T2.35	Invitation to Tender - SBD 1 (T2.35)	87-88

THE CONTRACT

3. PART C1: AGREEMENT AND CONTRACT DATA

C1.1	Form of Offer and Acceptance	93
C1.2	Contract Data	94-102
C1.3	Form of Guarantee (C1.3)	103-106

4. PART C2: PRICING DATA

C2.1	Pricing Instructions	107-111
C2.2	Preliminaries for GCC for Construction works	112-129
C2.3	Bills of Quantities	130-166

5. PART C3: SCOPE OF WORKS

C3.1	Scope of Works	166-173
C3.2	Specification for HIV/AIDS awareness	174-176
C3.3	HIV/STI Compliance report	177-178

6. PART C4: SITE INFORMATION

C4.1	Site Information	180

7. DRAWINGS

C5.1	List of Drawings	182

8. ANNEXURES

Annexure 1	Standard Preambles for all Trades (Rev 3) - DOH 2009	183-284
Annexure 1a	Supplementary Preambles	285-289
Annexure 2	General Electrical Specifications	290-311
Annexure 3	Lightning Protection Specifications	312-317
Annexure 4	Map of Tender submission location	318
Annexure 5	Joint Venture Agreement	319-325
Annexure 6	Health and Safety Specification	326-438
Annexure 7	Health and Safety Bill of Quantities	439-440
Annexure 8	Builders Lien Agreement	441
Annexure 9	Geotechnical Investigation Report (If applicable)	
Annexure 10	EPWP Employment Contract	442-450
Annexure 11	Attendance Register - Infrastructure and Other projects	451
Annexure 12	EPWP Data Collection tool for Phase 3 system	452
Annexure 13	Reference letter for previous projects	453
Annexure 14	Proforma Organogram	454

IMPORTANT NOTICE TO TENDERERS

Any reference to words Tender or Tenderder herein and/or in any other documentation shall be construed to have the same meaning as the words Tender or Tenderer. These forms are for internal and external use for the KZN Department of Public Works, Provincial Administration of KwaZulu-Natal.

"Quality" shall mean totality of features and characteristics of a product or service that bears on the ability of the product or service to satisfy stated or implied needs.

No alternativeTenders will be accepted.

The Total (Including Value Added Tax) on the Final Summary of the Bill of Quantities must be carried to the "Offer" part only of the Form of Offer and Acceptance - T2.21

"Enterprise" shall mean the legal Tendering Entity or Tenderer who, on acceptance of the offer, would become the contractor"

The Department will conduct a detailed risk assesment prior to the award of tender

In order to keep with equitable distribution of opportunities, bidders who have been awarded one (1) award in the Southern Region (Implemented in the current financial year) will not be consisdered for further awards in the same region. This will only be waivered if the bidder is the only responsive bidder, and the accumulated awarded amount is still wihin CIDB grading threshold, unless the contractor can demonstrate capacity to execute more projects

1. The department reserves the right not to award to the lowest bidder
2. In addition, the Department may conduct a detailed risk assesment prior to award of bid
3 The Bid document can be downloaded from e-Tender Portal (https://www.etenders.gov.za) at no cost. However, should the bidder require a printed/ hard copy of the bid document, a non refundable payment must be made for collection thereof as per the banking details indicated. Proof of payment must be produced upon collection of the bid document.
4. No site inspection certificate will be issued at the tender briefing meeting. The site inspection certificate must be signed and stamped by the department representative, during the briefing as proof of attendance, and should it not be signed your tender document will be disqualified.
5. Bidders who attend without a hardcopy bid document will not be allowed to the briefing
6. No late arrivals will be admitted to the tender briefing meeting
7. Late submissions will not be accepted
8. Faxed or email bids are not accepted
9. Only bidders registered on the Central Supplier Database and applicable CIDB grading 6EP or higher will be eligible to submit bids
10. The prefereence points system applicabe for this bid is 80/20 where 20 points of specific goals will be allocated as follows:

    Ownership by People who are Women . Documentary Proof Required:
    Certified Copy of Identity document/s
    SANAS Approved B-BBEE Certificate or Original Sworn Affidavit; signed and dated - 10 points

    Ownership by People who are Youth . Documentary Proof Required:
    Certified copy of Identity Document/s
    SANAS Approved B-BBEE Certificate or Original Sworn Affidavit; signed and dated by Commissioner of Oaths" -10 points

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

THE TENDER

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

PART T1. - TENDER PROCEDURES

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

T1.1 - TENDER NOTICE AND INVITATION TO TENDER

T1.1 TENDER NOTICE AND INVITATION TO TENDER

THE KZN DEPARTMENT OF PUBLIC WORKS INVITES TENDERS FOR THE PROVISION OF:

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**
Advertisement date:	**06 November 2026**	**Closing date:**	**09 December 2026**
Closing time:	**11:00**	**Validity period:**	**84 Calender Days**

It is estimated that tenderers must have a CIDB contractor grading designation of 6EP or higher. No alternative Class of work, as refered to in Clause 25(3)(a)(i) of the CIDB Regulations, as amended, is anticipated for this project.

	It is estimated that Potentially Emerging enterprises should have a CIDB contractor grading of ***(N/A)*** and satisfy the criterion stated in the Tender Data. *(Only applicable if Client has an Official Mentorship programme in place to assist potentially emerging enterprises)* All Tenderer's should have a CIDB Class of Construction Contractor Grading Designation as indicated above. No Tenderer with a PE status can be considered If **"N/A"** is indicated above because the Department does not have an Official Mentorship Programme in place to assist a Potentially Emerging Enterprise.

Only Tenderder's who are responsive to the following responsiveness criteria are eligible to submit Tenders:

X	Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25(1B) or 25(7A) of the Construction Industry Development Regulations for a : 6EP or higher, class of construction work, are eligible to have their Tenders evaluated."
X	Joint ventures are eligible to submit tenders provided that: 1 every member of the joint venture is registered with the CIDB; 2 the lead partner has a contractor grading designation in the 6EP or higher, class of construction work; or not lower than one level below the required the required grading designation in the class of works construction works under considerations and possess the required recognition status 3 the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a : **6EP or higher** or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations.
X	Tender document must be properly received on or before the tender closing date and time specified on the invitation, fully completed and signed in ink (All as per Standard Conditions of Tender).
X	Submission of Compulsory Returnable Schedules documents as per List of returnable documents.
X	Tax Compliance Status (TCS) PIN number and Tenderder's or entity tax reference number.
X	Contractor's Safety, Health and Environmental Declaration.
X	Complete priced Bill of Quantities to be submitted on the day of the Tender closing date.
X	Proof of good standing with the Compensation Commissioner - In terms of Section 84(1)(b) of the Compensation for Occupation Injuries and Disease Act, 1993, a Tenderder may not be awarded a contract if he/she is not registered and in good standing with the Compensation Commissioner.
X	Certified Proof of Paid Municipal Rates and Taxes (Attach) (T2.23)
X	Certified Proof of UIF Registration (Attach) (T2.24)
X	Financial Standing and other resources of Business Declaration (T2.8)
X	Compulsory Enterprise Questionnaire (T2.18)
X	**Tenderers must meet the minimum qualifying score for functionality criteria first before they can be considered for price and preference by means of specific goals**
X	Invitation to Tender - SBD 1

Please note the following for POPIA:

By submitting this tender, I hereby acknowledge consent that the KZN Department of Public Works, may, from time to time, collect/store/use/destroy/delete/share or otherwise process my Company and Director's/Shareholders personal information as the context or circumstances may require and as contemplated in terms of POPIA. ☐ (TICK)

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

Name of Tenderer: _____

Postal Address: _____

Street Address: _____

Telephone Number CODE _____ NUMBER _____

Cellphone Number: _____

Facsimile Number: CODE _____ NUMBER _____

E-mail Address: _____

VAT Registration Number: _____

TAX COMPLIANCE STATUS (TCS) PIN TO VERIFY ON LINE COMPLIANCE SUPPLIER STATUS VIA SARS e-FILING (T2.19) YES ☐ or NO ☐

ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS / SERVICES / WORKS OFFERED? [If yes, enclose proof] YES ☐ or NO ☐

This tender will be evaluated according to the preferential procurement model in the Preferential Procurement Policy Framework Act, 2000: Preferential Procurement Regulations, 2022: □

☒ 80/20 Preference point scoring system ☐ 90/10 Preference point scoring system

NOTE	Refer to T2.34 - Functionality Criteria

Functionality requirement:	60	Points
Price:	80	points

1. The Specific Goal/s Allocated Points in terms of this tender:

Preference points system:
Preferences are offered to Tenderder's who have attained points for the specific goals in accordance with the table below; Documentary Proof required to satisfy the points claimed are also indicated in the table below:

No	**Specific Goal**	**Number of Points Allocated**
1	•Ownership by People who are Women Documentary Proof Required: 1) Certified Copy of Identity document/s 2) SANAS Approved B-BBEE Certificate or Original of Sworn Affidavit; signed and dated by Commissioner of Oaths	**10**
2	Ownership by People who are Youth Documentary Proof Required: 1) Certified copy of Identity Document/s 2) SANAS Approved B-BBEE Certificate or Original of Sworn Affidavit; signed and dated by Commissioner of Oaths	**10**
2.	**Other specific goals (according to the PPPFA):**	
(a)	n/a	0 Points
(b)	n/a	0 Points
Total must equal **10 or 20 points**		**20** Points

Notes:

1 The successful Tenderder will be required to fill in and sign a written GCC 2010 2nd Edition Contract.

2 Tenderders should ensure that Tenders are delivered timeously to the correct address. If the Tender is late, it will not be accepted for consideration.

3 The requirements in respect of the application of either 80/20 and 90/10 preference points scoring system, will apply and the points reflected above for preferences will be adjusted accordingly on a pro-rata basis if required.

4 The Tender box is generally open during official working hours.

5 All Tenders must be submitted on the official forms – (Not to be re-typed)

6 This Tender is subject to the PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022, THE GENERAL CONDITIONS OF CONTRACT FOR CONSTRUCTION WORKS (GCC2010) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT

7 **The documentary proof required to satisfy the points claimed for specific goals in terms of this tender, are duly indicated on the table (1) above.**

8 Where stated in the tender data that a two-envelope system has been followed, open only the non-financial proposal of valid tenders in the presence of tenderer's agents, who choose to attend, at the time and place stated in the tender data and announce the name of each tenderer whose technical proposal is opened.

Evaluate that non-financial proposals offered by tenderers, then advise tenderers who remain in contention for the award of the contract of the time and place when the financial proposals are to be opened.

Open only the financial proposals of tenderers who, in the Functionality evaluation score, have more than the minimum number of points for Functionality stated in the tender data, and announce the score obtained for the non-financial proposals and the total price and any preferences claimed. Return unopened financial proposals to tenderers whose non-financial proposals failed to achieve the minimum number of points for Functionality.

THE PHYSICAL ADDRESS FOR COLLECTION OF TENDER DOCUMENTS:

Tender documents may be collected during working hours at the following address :

Department of Public Works, 10 Prince Alfred Street

A non-refundable tender deposit of R450 is payable as per the tender advertisement , on collection of the Tender documents. The Tenderders must deposit the the above amount into the Department's bank account. The Account details are:

Account Name:	KZN PROV GOV-WORKS
Bank Name:	ABSA
Account Number:	4121941044
Bank Code:	BUSINESS CHEQUE
Reference No:	Ref No 14074037

The Tenderder must attach the account statement with above reference, to this Tender as proof of payment of the deposit.

COMPULSORY CLARIFICATION MEETING

A Compulsory clarification Meeting with representatives of the Employer will take place as follows:

Lecture Room, 11h00

on: **Tuesday, 24 November 2026**

QUERIES REGARDING THE TENDERING PROCEDURE OR TECHNICAL INFORMATION MAY BE DIRECTED TO:

DOPW Project Manager:	Mr. N Dube	**DOPW SCM Official:**	Ms Nelisiwe Zulu
Cell no:	072 252 9809	**Fax no:**	079 524 0886
E-mail:	ndabezinhle.dube@kznworks.gov.za		nelisiwezulu@kznworks.gov.za

DEPOSIT / RETURN OF TENDER DOCUMENTS:

Telegraphic, telephonic, telex, facsimile, electronic, posted and / or late tenders will **not** be accepted.

Requirements for sealing, addressing, delivery, opening and assessment of tenders are stated in the **Tender Data document.**

All tenders must be submitted on the official forms – (not to be re-typed)

TENDER DOCUMENTS MAY BE:

DEPOSITED IN THE TENDER BOX AT:

Southern Region

Southern Region Office, 10 Prince Alfred Street

Pietermarizburg

3200

PA-04.1: SUMMARY FOR TENDER OPENING

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender / Bid no:	ZNTM01130W	**WIMS no:**	073636

To facilitate **announcing details of an Offer at the opening** of Tenders at the stated venue as recorded in this document, the Tenderer shall provide by way of summary below the following information.

Name of Tendering Entity: _____

Tender Sum

R _____ (as stated in the Form of Offer, inclusive of VAT)

Amount in Words

_____

_____

I, _____(name of person authorised to sign on behalf of Tenderer) certify that the offer is fully in accordance with this Tender Document and specifications.

Duly signed at _____ on this day of _____of _____. 200___

_____ _____

Signature
(of person authorised to sign Tender)

Date

NB: THIS IS ONLY FOR TENDER OPENING PURPOSES AND DOES NOT REPLACE THE OFFER AND ACCEPTANCE FORM (DOW-07 KZN)

Tenderers attention is drawn to the fact that Offer and Acceptance Form (DOW-07 KZN) should be completed in full and signed as the official Offer to the Employer. Failure to submit the DOW-07 KZN could lead to the Tenderer's offer being disqualified and non-responsive

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

T1.2 - TENDER DATA

T1.2 TENDER DATA

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Project Code:	**073636**		
Tender no:	**ZNTM01130W**	**Closing date:**	**09 December 2026**
Closing time:	**11:00**	**Validity period:**	**84 Calender Days**

Clause number:		
	The conditions of Tender are the Standard Conditions of Tender as contained in Annexure C of the CIDB Standard for Uniformity in Engineering and Construction Works Contracts as per Board Notice **423 of 2019** in Government Gazette **42622 of 8 August 2019** as amended from time to time. (see www.cidb.org.za) Refer to Conditions of Tender as bound into this document. The Standard Conditions of Tender make several references to the Tender Data for details that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender. Each item of data given below is cross-referenced to the clause marked "C" in the above mentioned Standard Conditions of Tender.	
C.1.1	The Employer is the Head: Public Works (KZN Department of Public Works-Province of KwaZulu-Natal)	
	For this contract the single volume approach is adopted. This procurement document has been formatted and compiled under the headings for a single volume approach as contained in table 5 of the CIDB's "Standard for Uniformity in Engineering and Construction Works Contracts." The list of Returnable Documents identifies which of the documents a Tenderder must complete when submitting a Tender. The Tenderder must submit his Tender by completing the Returnable Documents including the priced Final Summary of the Bills of Quantities, signing the "Offer" section in the "Form of Offer and Acceptance" and delivering the whole of the procurement document back to the Department bound up as it was when it was received.	
C.1.2	The single volume procurement document issued by the Employer comprises the following:	
	TENDER	
	Part T1: Tendering procedures	
	T1.1 -	Tender Notice and Invitation to Tender
	T1.2 -	Tender Data
	T1.3 -	Annexure C - Standard Conditions of Tender
	Part T2: Returnable documents	
	T2.1 -	List of returnable documents
	T2.2 -	Returnable schedules (See different forms listed in ***T2.1 - Returnable Schedule***)
	CONTRACT	
	Part C1: Agreements and Contract Data	
	C1.1 -	Form of Offer and Acceptance
	C1.2 -	Contract Data
	C1.3 -	Form of Guarantee (C1.3)
	Part C2: Pricing data	
	C2.1 -	Pricing Instructions
	C2.2 -	Preliminaries for GCC for Construction works
	Part C3: Scope of works	
	C3.1 -	Scope of Works
	C3.2 -	Specification for HIV/AIDS awareness
	C3.3 -	HIV/STI Compliance report
	C3.4 -	Project Specific Construction Safety, Health and Environmental Specification
	C3.5 -	Supplementary Preambles

	Part C4: Site information	
	C4.1 -	Site Information
	C4.2 -	Builders Lien Agreement
	Part 5: List of Drawings/Annexure's	
	C5.1 -	List of Drawings
	C5.2 -	Standard Preambles for all Trades (Rev 3) - DOH 2009
	C5.3 -	General Electrical Specifications
	C5.4 -	Lightning Protection Specifications
	C5.5 -	Map of Tender submission location
	C5.6 -	Joint Venture Agreement
	C5.7 -	Health and Safety Specification
	C5.8 -	Health and Safety Bill of Quantities
	C5.9 -	Builders Lien Agreement
	C5.10	Geotechnical Investigation Report (If applicable)
	C5.11	EPWP Employment Contract
	C5.12	Attendance Register - Infrastructure and Other projects
	C5.13	EPWP Data Collection tool for Phase 3 system
C.1.4	The Employer's agent (Engineer/Principal Agent) is:	
	Name:	**Ibuya Consulting Engineers**
	Capacity:	**Principal Agent/Engineer**
	Address:	**P.O.Box 1692, Wandsbeck , Westville , Durban , 3629**
	Tel:	**0312667332**
	Fax:	**0312667340**
	E-mail:	**justin@ibuya.co.za**
	Responsible person:	**Mr. Justin McKelvie-King**
	The second sentence shall read "Communications can be in any of the official languages recognised in KwaZulu-Natal which is English, Afrikaans or Zulu but writing is preferred in English as this is generally accepted as a business language"	
C.1.6	**PP2-Competitive Selection Procedure**	**Design by Employer**
	PP2B-Open Procedure	
	Tenderers must meet the minimum qualifying score for functionality criteria first before they can be considered for price and preference.	

C.2.1	For eligibility refer to **T1.1 Tender Notice and Invitation to Tender**
	This is not an EPWP project
	Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25(1B) or 25(7A) of the Construction Industry Development Regulations for a : 6EP or Ł or higher class of construction work, are eligible to have their tenders evaluated. Joint ventures are eligible to submit tenders provided that: 1 every member of the joint venture is registered with the CIDB; 2 the lead partner has a contractor grading designation in the 6EP or higher, class of construction work; or not lower than one level below the required the required grading designation in the class of works construction works under considerations and possess the required recognition status 3 the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a : 6EP or higher or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations.
	See end of T2.3 AUTHORITY FOR CONSORTIA OR JOINT VENTURES TO SIGN TENDER for combinations of JV's arrangements.
C.2.7	For particulars regarding a pre-tender site inspection meeting (clarification meeting), see **T1.1 Tender Notice and Invitation to Tender.**
C.2.12	Alternative tender offer permitted: **Yes** ☐ **No** ☒
	If a tenderer wishes to submit an own alternative tender offer, the only criteria permitted for such alternative tender offer is that it demonstrably satisfies the Employer's standards and requirements. A tenderer may submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted. Provided that the tenderer's main tender offer is according to specification and would under normal circumstances be recommended for acceptance, his alternative tender offer may also be considered for the purpose of the award of the contract. Calculations, drawings and all other pertinent technical information and characteristics as well as modified or proposed Pricing Data must be submitted with the alternative tender offer to enable the Employer to evaluate the efficacy of the alternative and its principal elements, to take a view on the degree to which the alternative complies with the Employer's standards and requirements and to evaluate the acceptability of the pricing proposals. Calculations must be set out in a clear and logical sequence and must clearly reflect all design assumptions. Pricing Data must reflect all assumptions in the development of the pricing proposal. Acceptance of an alternative tender offer will mean acceptance in principle of the offer. It will be an obligation of the contract for the tenderer, in the event that the alternative is accepted, to accept full responsibility and liability that the alternative offer complies in all respects with the Employer's standards and requirements. The modified Pricing Data must include an amount equal to 5% of the amount tendered for the alternative offer to cover the Employer's costs of confirming the acceptability of the detailed design before it is constructed.

	Only the complete Service as per the Bills of Quantities
C.2.13.2	Tenderers are to ensure that their company details appear on the entire relevant Tender documentation and must be legible.
C.2.13.3	Part of each tender offer communicated on paper shall be submitted as an original, plus ONE copy of the tender document including supporting documents and priced Bill of Quantities where applicable, scanned onto a readable compact disk (CD) in pdf format, at the Tenderders own cost. The CD must be clearly marked with the tender information and company details.
C.2.13.4	The second sentence shall read as follows "The Employer will hold all authorised signatories jointly and severally liable on behalf of the tenderer". Tenderders proposing to contract as a Joint Venture shall submit a valid Joint Venture Agreement before the Joint Venture's offer could be accepted. Individuals, Partnerships and Companies proposing to contract as a party to a Joint Venture shall be jointly and severally liable on behalf of the Joint Venture.
C.2.13.5	The Employer's address for delivery of tender offers and identification details to be shown on each tender offer package are as per **T1.1 Tender Notice and Invitation to Tender.**
	A Open Procedure will be followed
C.2.15	The closing time for submission of tender offers is as per **T1.1 Tender Notice and Invitation to Tender.**
C.2.16	The tender offer validity period is as per **T1.1 Tender Notice and Invitation to Tender.**
C.2.17	Sub-clause C2.17 does not preclude the negotiation of the final terms of the contract with the preferred tenderer, following a competitive selection process, should the Employer elect to do so and provided that the competitive position of the preferred tenderer is not affected.
	The tenderer is to submit the Priced Bills of Quantities with the Returnable's at the closing of the tender.
	This is not an EPWP project
C.2.19	Access shall be provided for inspections, tests and analysis as may be required by the Employer.
C.2.22	Tenderers **do not** have to return all retained tender documents within 28 days after expiry of the Tender validity period.
	Tenderers are to refer to **List of Returnable Schedules** and **Scope of Works** to establish what is required to be submitted with this tender.
C.3.4	The location for opening of the tender offers, immediately after the closing time thereof shall be at: **KZN Department of Public Works, Southern Region Office, 10 Prince Alfred Street, Pietermaritzburg, 3200 at the time indicated on T1.1 Notice and Invitation to Bid**

C.3.8	The employer must determine, on opening and before detailed valuation, whether each Tender offer properly received: a) complies with the requirements of the Conditions of Tender. b) has been properly and fully completed and signed, and c) is responsive to the other requirements of the Tender documents. A responsive tender is one that conforms to all the terms, conditions and specifications of the tender documents without material deviation or qualification. A material deviation or qualification is one which, in the Employer's opinion, would: a) detrimentally affect the scope, quality, or performance of the Works, services or supply identified in the Scope of Work or b) significantly change the Employers or the Tenderers risks and responsibilities under the contract, or c) affect the competitive position of other Tenderers presenting responsive tenders, if it were to be rectified. Reject a non-responsive tender offer, and not allow it to be subsequently made responsive by correction or withdrawal of the non-conforming deviation or reservation.
C.3.13	**Tender offers will only be accepted if:** (a) Tenderders must be registered on Government's Central Supplier Database (CSD) and include their master registration number (MAAA number) on the cover page of the tender document in order to enable the institution to verify the tenderers tax status on the CSD (b) the Tenderder is registered with the Construction Industry Development Board in an appropriate contractor grading designation is required for this tender and the Tenderder has submitted a CIDB certificate of registration which clearly indicates the status "Active" (c) the Tenderder is not in arrears for more than 3 months with municipal rates and taxes and municipal services charges. (d) the Tenderder has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the Tenderder's ability to perform to the contract in the best interests of the employer or potentially compromise the Tender process. (e) the tenderer or any of its directors is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act, 2004 (Act No. 12 of 2004) as a person prohibited from doing business with the public sector; and (f) the Tenderder has not: i) abused the Employer's Supply Chain Management System; or ii) failed to perform on any previous contract and has been given a written notice to this effect. (g) the Tenderder is registered with: i) the Unemployment Insurance Fund (UIF); and ii) the Workmen's Compensation Fund (h) the Tenderder submitted Authority to Sign the tender. (i) the Tenderder submitted Financial standing & other resources of Business Declaration. (j) the Tenderder submitted Equipment Schedules, if applicable. (k) the Tenderder signed the Form of Offer that is part of the Form of Offer and Acceptance. (l) the Tenderder submitted Preference Certificate, if applicable. (m) the Tenderder submit Final Summary of Bill of Quantities at tender closing. (n) the Tenderder submitted Bidder's Disclosure. (o) the Tenderder submitted Site Inspection Certificate from the Compulsory Briefing Meeting (p) All information required to assess 'Functionality" as per Tender Data scheduled requirements Providing the form of offer and acceptance does not contain any qualifying statements, it will constitute the formation of a contract between the employer and the successful Tenderder as described in the form of offer and acceptance.
C.3.15	Tenderders are informed that any formal dispute shall be resolved by being referred to Arbitration only.
C.3.17	Provide to the successful Tenderder one copy of the signed contract document and one copy of an unpriced bills of quantities

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

T1.3 - Annexure C - Standard Conditions of Tender

T1.3 - Annexure C - Standard Conditions of Tender

Note: Where this document refers to Bid or Bidder it shall be read as tender or tenderer

C.1 General

C.1.1 Actions

C.1.1.1 The employer and each tenderer submitting a tender offer shall comply with these conditions of tender. In their dealings with each other, they shall discharge their duties and obligations as set out in C.2 and C.3, timeously and with integrity, and behave equitably, honestly and transparently and comply with all legal obligations and not engage in anticompetitive practices.

C.1.1.2 The employer and the tenderer and all their agents and employees involved in the tender process shall avoid conflicts of interest and where a conflict of interest is perceived or known, declare any such conflict of interest, indicating the nature of such conflict. Tenderer's shall declare any potential conflict of interest in their tender submissions. Employees, agents and advisors of the employer shall declare any conflict of interest to whoever is responsible for overseeing the procurement process or as soon as they become aware of such conflict, and abstain from any decisions where such conflict exists or recuse themselves from the procurement process, as appropriate.

Note: 1) A conflict of interest may arise due to a conflict of roles which might provide an incentive for improper acts in some circumstances. A conflict of interest can create an appearance of impropriety that can undermine confidence in the ability of that person to act properly in his or her position even if no improper acts result.

2) Conflicts of interest in respect of those engaged in the procurement process include direct, indirect or family interests in the tender or outcome of the procurement process and any personal bias, inclination, obligation, allegiance or loyalty which would in any way affect any decisions taken.

C.1.1.3 The employer shall not seek and the tenderer shall not submit a tender without having a firm intention and the capacity to proceed with the contract.

C.1.2 Tender Documents

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

C.1.3 Interpretation

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

C.1.3.2 These conditions of tender, the **tender data** and tender schedules which are required for tender evaluation purposes, shall form part of any contract arising from the invitation to tender.

C.1.3.3 For the purposes of these conditions of tender, the following definitions apply:

a) **conflict of interest** means any situation in which:
   i) someone in a position of trust has competing professional or personal interests which make it difficult to fulfil his or her duties impartially;
   ii) an individual or tenderer is in a position to exploit a professional or official capacity in some way for their personal or corporate benefit; or
   iii) incompatibility or contradictory interests exist between an employee and the tenderer who employs that employee.

b) **comparative offer** means the price after the factors of a non-firm price and all unconditional discounts it can be utilised to have been taken into consideration;

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

d) **fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the employer, including collusive practices intended to establish prices at artificial levels.

C.1.4 Communication and employer's agent

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

C.1.5 Cancellation and Re-Invitation of Tenders

C.1.5.1 An employer may, prior to the award of the tender, cancel a tender if-

a) due to changed circumstances, there is no longer a need for the engineering and construction works specified in the inviteation;

b) funds are no longer available to cover the total envisaged expenditure; or

c) no acceptable tenders are received.

d) there is a material irregularity in the tender process.

C.1.5.2 The decision to cancel a tender invitation must be published in the same manner in which the original tender invitation was advertised.

C.1.5.3 An Employer may only with the prior approval of the relevant treasury cancel a tender invitation for the second time.

C.1.6 Procurement procedures

C.1.6.1 General

Unless otherwise stated in the **tender data**, a contract will, subject to C.3.13, be concluded with the tenderer who in terms of C.3.11 is the highest ranked or the tenderer scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.

C.1.6.2 Competitive negotiation procedure

C.1.6.2.1 Where the **tender data** requires that the competitive negotiation procedure is to be followed, tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of C.3.4, the employer shall announce only the names of the tenderers who make a submission. The requirements of C.3.8 relating to the material deviations or qualifications which affect the competitive position of tenderers shall not apply.

C.1.6.2.2 All responsive tenderers, or at least a minimum of not less than three responsive tenderers that are highest ranked in terms of the evaluation criteria stated in the **tender data**, shall be invited to enter into competitive negotiations based on the principle of equal treatment, keeping confidential the proposed solutions and associated information. Notwithstanding the provisions of C.2.17, the employer may request that tenders be clarified, specified and fine-tuned in order to improve a tenderer's competitive position provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.

C.1.6.2.3 At the conclusion of each round of negotiations, tenderers shall be invited by the employer to revise their tender offer based on the same evaluation criteria, with or without adjusted weightings. Tenderers shall be advised when they are to submit their best and final offer.

C.1.6.2.4 The contract shall be awarded in accordance with the provisions of C.3.11 and C.3.13 after tenderers have been requested to submit their best and final offer.

C.1.6.3 Proposal procedure using the two stage-system

C.1.6.3.1 Option 1

Tenderers shall in the first stage submit technical proposals and, if required, cost parameters around which a contract may be negotiated. The employer shall evaluate each responsive submission in terms of the method of evaluation stated in the **tender data**, and in the second stage negotiate a contract with the tenderer scoring the highest number of evaluation points and award the contract in terms of these conditions of tender.

F.1.6.3.2 Option 2

C.1.6.3.2.1 Tenderers shall submit in the first stage only technical proposals. The employer shall invite all responsive tenderes to submit tender offers in the second stage, following the issuing of procurement

C.1.6.3.2.2 The employer shall evaluate tenders received during the second stage in terms of the method of evaluation stated in the **tender data**, and award the contract in terms of these conditions of tender.

C.2 Tenderer's obligations

C.2.1 Eligibility

C.2.1.1 Submit a tender offer only if the tenderer satisfies the criteria stated in the **tender data** and the tenderer, or any of his principals, is not under any restriction to do business with employer.

C.2.1.2 Notify the employer of any proposed material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used by the employer as the basis in a prior process to invite the tenderer to submit a tender offer and obtain the employer's written approval to do so prior to the closing time for tenders.

C.2.2 Cost of tendering

C.2.2.1 Accept that, unless otherwise stated in the **tender data**, the employer will not compensate the tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer complies with requirements.

C.2.2.2 The cost of the tender documents charged by the employer shall be limited to the actual cost incurred by the employer for printing the documents. Employers must attempt to make available the tender documents on its website so as not to incur any costs pertaining to the printing of the tender documents.

C.2.3 Check documents

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

C.2.4 Confidentiality and copyright of documents

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

C.2.5 Reference documents

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

C.2.6 Acknowledge addenda

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

C.2.7 Clarification meeting

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

C.2.8 Seek clarification

Request clarification of the tender documents, if necessary, by notifying the employer at least five (5) working days before the closing time stated in the **tender data**.

C.2.9 Insurance

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

C.2.10 Pricing the tender offer

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

C.2.10.2 Show VAT payable by the employer separately as an addition to the tendered total of the prices.

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

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

C.2.11 Alterations to documents

Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations.

C.2.12 Alternative tender offers

C.2.12.1 Unless otherwise stated in the **tender data**, submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted as well as a schedule that compares the requirements of the tender documents with the alternative requirements that are proposed.

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

C.2.12.3 An alternative tender offer must only be considered if the main tender offer is the winning tender.

C.2.13 Submitting a tender offer

C.2.13.1 Submit one tender offer only, either as single tendering entity or as a member in a joint venture to provide the whole of the works, services or supply identified in the **contract data** and described in the **scope of works**, unless stated otherwise in the **tender data**.

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

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

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

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

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

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

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

C.2.13.9 Accept that tender offers submitted by facsimile or e-mail will be rejected by the employer, unless stated otherwise in the **tender data**.

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

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

C.2.15 Closing time

C.2.15.1 Ensure that the employer receives the tender offer at the address specified in the **tender data** not later than the closing time stated in the tender data. Accept that proof of posting shall not be accepted as proof of delivery.

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

C.2.16 Tender offer validity

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

C.2.16.2 If requested by the employer, consider extending the validity period stated in the **tender data** for an agreed additional period with or without any conditions attached to such extension.

C.2.16.3 Accept that a tender submission that has been submitted to the employer may only be withdrawn or substitutes by giving the employer's agent written notice before the closing time for tenders that a tender is to be withdrawn or substituted. If the validity period lapses before the employer evaluating the tender offer(s), the contractor reserves the right to review the price based on Consumer Price Index (CPI)

C.2.16.4 Where a tender submission is to be substituted, a tenderer must submit a substitute tender in accordance with the requirements of C.2.13 with the packages clearly marked as "SUBSTITUTE".

C.2.17 Clarification of tender offer after submission

Provide clarification of a tender offer in response to a request to do so from the employer during the evaluation of tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.

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

C.2.18 Provide other material

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

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

C.2.19 Inspections, tests and analysis

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

C.2.20 Submit securities, bonds and policies

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

C.2.21 Check final draft

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

C.2.22 Return of other tender documents

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

C.2.23 Certificates

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

C.3 The employer's undertakings

C.3.1 Respond to request from the tenderer

C.3.1.1 Unless otherwise stated in the **tender data**, respond to a request for clarification received up to five (5) working days before the tender closing time stated in the **tender data** and notify all tenderers who collected tender documents.

C.3.1.2 Consider any request to make a material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used to prequalify a tenderer to submit a tender offer in terms of a previous procurement process and deny any such request if as a consequence:

a) an individual firm, or a joint venture as a whole, or any individual member of the joint venture fails to meet any of the collective or individual qualifying requirements;

b) the new partners to a joint venture were not prequalified in the first instance, either as individual firms or as another joint venture; or

c) in the opinion of the Employer, acceptance of the material change would compromise the outcome of the prequalification process.

C.3.2 Issue Addenda

If necessary, issue addenda that may amend or amplify the tender documents to each tenderer during the period from the date that tender documents are available until three (3) days before the tender closing time stated in the **tender data**. If, as a result a tenderer applies for an extension to the closing time stated in the **tender data**, the Employer may grant such extension and, shall then notify all tenderers who collected tender documents.

C.3.3 Return late tender offers

Return tender offers received after the closing time stated in the **tender data**, unopened, (unless it is necessary to open a tender submission to obtain a forwarding address), to the tenderer concerned.

C.3.4 Opening of tender submissions

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

C.3.4.2 Announce at the meeting held immediately after the opening of tender submissions, at a venue indicated in the **tender data**, the name of each tenderer whose tender offer is opened and, where applicable, the total of his prices, number of points claimed for its BBBEE status level and time for completion for the main tender offer only.

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

C.3.5 Two-envelope system

C.3.5.1 Where stated in the tender data that a two-envelope system is to be followed, open only the technical proposal of valid tenders in the presence of tenderer's' agents who choose to attend at the time and place stated in the **tender data** and announce the name of each tenderer whose technical proposal is opened.

C.3.5.2 Evaluate the functionality of the technical proposals offered by tenderers, then advise tenderers who remain in contention for the award of the contract of the time and place when the financial proposals will be opened. Open only the financial proposals of tenderers, who score in the functionality evaluation more than the minimum number of points for functionality stated in the **tender data**, and announce the score obtained for the technical proposals and the total price and any points claimed on BBBEE status level. Return unopened financial proposals to tenderers whose technical proposals failed to achieve the minimum number of points for functionality.

C.3.6 Non-disclosure

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

C.3.7 Grounds for rejection and disqualification

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

C.3.8 Test for responsiveness

C.3.8.1 Determine, after opening and before detailed evaluation, whether each tender offer properly received:

a) complies with the requirements of these Conditions of Tender,

b) has been properly and fully completed and signed, and

c) is responsive to the other requirements of the tender documents.

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

a) detrimentally affect the scope, quality, or performance of the works, services or supply identified in the Scope of Work,

b) significantly change the Employer's or the tenderer's risks and responsibilities under the contract, or

c) affect the competitive position of other tenderers presenting responsive tenders, if it were to be rectified.

Reject a non-responsive tender offer, and not allow it to be subsequently made responsive by correction or withdrawal of the non-conforming deviation or reservation.

C.3.9 Arithmetical errors, omissions and discrepancies

C.3.9.1 Check Responsive tenders for discrepancies between amounts in words and amounts in figures.Where there is a discrepancy between the amounts in figures and the amount in words, the amount in words shall govern.

C.3.9.2 Check the highest ranked tender or tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with C.3.11 for:

a) the gross misplacement of the decimal point in any unit rate;

b) omissions made in completing the pricing schedule or bills of quantities; or

c) arithmetic errors in:

i) line items totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or

ii) the summation of the prices.

C.3.9.3 Notify the tenderer of all errors or omissions that are identified in the tender offer and either confirm the tender offer as tendered of accept the corrected total of prices

C.3.9.4 Where the tenderer elects to confirm the tender offer as tendered, correct the errors as

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

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

C.3.10 Clarification of a tender offer

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

C.3.11 Evaluation of tender offers

The Standard Conditions of Tender standardize the procurement processes, methods and procedures from the time that tenders are invited to the time that a contract is awarded. They are generic in nature and are made project specific through choices that are made in developing the Tender Data associated with a specific project.

Conditions of tender are by definition the document that establishes a tenderer’s obligations in submitting a tender and the employer’s undertakings in soliciting and evaluating tender offers. Such conditions establish the rules from the time a tender is advertised to the time that a contract is awarded and require employers to conduct the process of offer and acceptance in terms of a set of standard procedures

The CIDB Standard Conditions of Tender are based on a procurement system that satisfies the following system requirements:	
Requirement	**Qualitative interpretation of goal**
Fair	The process of offer and acceptance is conducted impartially without bias, providing simultaneous and tim access to participating parties to the same information.
Equitable	Terms and conditions for performing the work do not unfairly prejudice the interests of the parties.
Transparent	The only grounds for not awarding a contract to a tenderer who satisfies all requirements are restrictions from doing business with the employer, lack of capability or capacity, legal impediments and conflicts of interest.
Competitive	The system provides for appropriate levels of competition to ensure cost effective and best value outcome
Cost effective	The processes, procedures and methods are standardized with sufficient flexibility to attain best value outcomes in respect of quality, timing and price, and least resources to effectively manage and control procurement processes.

The activities associated with evaluating tender offers are as follows:

a) Open and record tender offers received
b) Determine whether or not tender offers are complete
c) Determine whether or not tender offers are responsive
d) Evaluate tender offers
e) Determine if there are any grounds for disqualification
f) Determine acceptability of preferred tenderer
g) Prepare a tender evaluation report
h) Confirm the recommendation contained in the tender evaluation report □

C.3.11.1 General

The employer must appoint an evaluation panel of not less than three persons conversant with the proposed scope of works to evaluate each responsive tender offer using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the tender data.

□

C.3.12 Insurance provided by the employer

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

C.3.13 Acceptance of tender offer

Accept tender offer, if in the opinion of the employer, it does not present any risk and only if the tenderer:

a) Is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement,

b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract,

c) has the legal capacity to enter into the contract,

d) is not; insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act No. 2008, bankrupt or being wound up, has his/her affairs administered by a court or a judicial officer, has suspended his/her business activities or is subject to legal proceedings in respect of any of the foregoing;

e) complies with the legal requirements, if any, stated in the **tender data**, and

f) is able, in the opinion of the employer, to perform the contract free of conflicts of interest.

C.3.14 Prepare contract documents

C.3.14.1 If necessary, revise documents that shall form part of the contract and that were issued by the employer as part of the tender documents to take account of:

a) addenda issued during the tender period,

b) inclusion of some of the returnable documents, and

c) other revisions agreed between the employer and the successful tenderer.

C.3.14.2 Complete the schedule of deviations attached to the form of offer and acceptance, if any.

C.3.15 Complete Adjudicator's Contract

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

C.3.16 Registration of the Award

An Employer must, within twenty-one (21) working days from the date on which a contractor's offer to perform a construction works contract is accepted in writing by the employer, register and publish the award on the cidb Register of Projects.

C.3.17 Provide copies of the contracts

Provide to the successful tenderer the number of copies stated in the tender data of the signed copy of the contract as soon as possible after completion and signing of the form of offer and acceptance.

C.3.18 Provide written reasons for actions taken

Provide upon request written reasons to tenderers for any action that is taken in applying these conditions of tender but withhold information which is not in the public interest to be divulged, which is considered to prejudice the legitimate commercial interests of tenderers or might prejudice fair competition between tenderers.

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

PART T2 - RETURNABLE DOCUMENTS

T2.1 LIST OF RETURNABLE DOCUMENTS

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Project Manager:	**Mr. N Dube**	**Tender no:**	**ZNTM01130W**

1. RETURNABLE SCHEDULES REQUIRED FOR TENDER EVALUATION PURPOSES

(Tenderer to Insert a tick (√) in the "Returnable document" column to check which documents he/she returned with the tender)

Tender document name	Returnable document	
Bidder's Disclosure - SBD 4 (T2.11)	**Yes**	
PA-04,1- Summary for tender opening (T2.2)	**Yes**	
Authority for Consortia or Joint Venture's to Sign Tender (T2.3)	**Yes**	
Special Resolution of Consortia or Joint Venture's (T2.4)	**Yes**	
Schedule of Proposed Sub-Contractors (T2.6)	**Yes**	
Joint Venture Involvement Declaration (T2.5)	**Yes**	
Capacity of Tenderer (T2.7)	**Yes**	
Annual Financial Statement for past financial year (2.15)	**Yes**	
Site Inspection Certificate as proof for attendance of compulsory briefing meeting (T2.10)	**Yes**	
Preference Points Claim Form (T2.9)	**Yes**	
Compulsory Enterprise Questionnaire (T2.18)	**Yes**	
Financial Standing and other resources of Business Declaration (T2.8)	**Yes**	
Contractor's Safety, Health and Environmental Declaration (T2.17)	**Yes**	
Complete Priced Bill of Quantities (T2.22)	**Yes**	
Certified Proof of CIDB Registration Number (T2.27)	**Yes**	
Contract Form - Purchase of Goods/Works - Part 1 (T2.29)	**Yes**	
Contract Form - Purchase of Goods/Works - Part 2 (T2.30)	**Yes**	
Functionality Criteria (T2.34)	**Yes**	
Invitation to Tender - SBD 1 (T2.35)	**Yes**	

2. RETURNABLE SCHEDULES REQUIRED FOR TENDER EVALUATION PURPOSES BUT TO BE SUPPLIED BY THE TENDERER

(Tenderer to Insert a tick (√) in the "Returnable document" column to check which documents he/she returned with the tender)

Tender document name	Returnable document	
Tax Compliance Status (TCS) PIN to verify on line Compliance Supplier Status via e-Filing (T2.19)	**Yes**	
Certified Proof of Good Standing with the Compensation Commissioner (Attach) (T2.20)	**Yes**	
Proof of payment of Tender deposit (T2.28)	**Yes**	
Certified Proof of Paid Municipal Rates and Taxes (Attach) (T2.23)	**Yes**	
Certified Proof of UIF Registration (Attach) (T2.24)	**Yes**	
Certified Proof of Registration Number on the Central Suppliers Database (T2.26)	**Yes**	
Annual Financial Statement for past financial year (2.15)	**Yes**	
Entire tender document including returnable and supporting documents, scanned as PDF onto a CD, clearly marked with the Tender information.	**Yes**	

3. RETURNABLE SCHEDULES THAT WILL BE INCORPORATED INTO THE CONTRACT

(Tenderder to Insert a tick (√) in the "Returnable document" column to check which documents he/she returned with the Tender)

Tender document name	Returnable document	
Form of Offer and Acceptance (Bound into Section 1 of 2) (T2.21)	**Yes**	
Record of Addenda to Tender Documents (T2.12)	**Yes**	
Particulars of Electrical Contractor (T2.13)	**Yes**	
Equipment Schedules-Mechanical / Electrical / Security Material (T2.16)	**Yes**	
Schedule of Imported Materials and Equipment (T2.14)	**Yes**	
Confirm Receipt of Offer and Acceptance (T2.21a)	**Yes**	

4. OTHER DOCUMENTS THAT WILL BE INCORPORATED INTO THE CONTRACT

(Tenderder to Insert a tick (√) in the "Returnable document" column to check which documents he/she returned with the Tender)

Tender document name	Returnable document	
Bill of Quantities (T2.22)	**Yes**	
Form of Guarantee (C1.3)	**Yes**	
List of Drawings/Annexure's (C5.1)	**Yes**	
The National Industrial Participation Programme (T2.25)	**Yes**	
Required Structure of Contractor's detailed OHSE Plan (T2.31)	**Yes**	
Client's specific requirements for the Contractor's detailed OHSE Plan (T2.32)	**Yes**	
Base line Risk Assessment (T2.33)	**Yes**	

5. DOCUMENTS REQUIRED FOR THE EVALUATION OF FUNCTIONALITY

(Tenderder to Insert a tick (√) in the "Returnable document" column to check which documents he/she returned with the Tender)

Tender document name	Returnable	
List of 3 projects where bidders must provide Award letters which include the value of the project and duruation (3 points per letter)	**Yes**	
List of 3 projects where bidders must provide completion certificates for each project (2 points per practical completion certtificate)	**Yes**	
Bidders must provide reference letters fpr the submitted projects, commenting positively on the management of the project for each of the three project provided. See Annexure 13/ profroma	**Yes**	
Detailed project specific organogram that reflacts names and roles (eg. Director, Manager or supervisor) See Annexure 14/ proforam (15 points for full information)	**Yes**	
Tenderer to submit the CV's indicating experience and relevant qualifications as per project specific organogram [To obtain full points a person must have relevant experience in the area of construction and electrical works] -Construction Manager -Electrical Engineer registed with ECSA ar Pr Eng or Pr Tech Eng -Safety Officer registered with SACPCMP -Master Installation Electrician	**Yes**	
Signed letter of credit reference from relevant major supplier who supplies Switchgear, Transfromers, Reactive power banks, Cables and distribution boards. Letter not older the 1 year, to be on an official letterhead signed and dated. Credit limits of R 3 millionand above (maximum 3 letters) (5 points per credit letter dated and signed equating to 15 full points)	**Yes**	
Detialed statement of the proposed methodology of implementing the project without disturbing operation within the hospital. The following must be included: List of all proposed electrical specalist sub contractors, including complance certificate for electrician/s who will be directly involved on the project	**Yes**	

T2.2 AUTHORITY TO SIGN TENDER

RESOLUTION of a meeting of the Board of *Directors / Members / Partners of:

_____

_____

(Legally correct full name and registration number, if applicable, of the Enterprise)

held at *(town)*: _____ on *(date)*: _____

RESOLVED that:

1. The Enterprise submits a Tender to the KZN Department of Public Works in respect of the following project:

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

Tender Number: **ZNTM01130W**

2.
*Mr./Mrs./Ms: _____

in *his/her capacity as: _____ *(Position in the Enterprise)*

and who will sign as follows: _____ (Authorised Signatory)

be, and is hereby, authorised to sign the Tender, and any and all other documents and/or correspondence in connection with and relating to this Tender, as well as to sign any Contract, and any and all documentation, resulting from the award of the Tender to the Enterprise mentioned above.

	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			
7			
8			

Note:

*1. * Delete which is not applicable.*

2. NB. This resolution / Power of Attorney must be signed by all the Directors / Members / Partners of the Legal Tendering Enterprise authorising the Representative to make this Offer.

3. Should the number of Directors / Members/Partners exceed the space available above, additional names and signatures must be supplied on a separate page.

*4. In the case of the tendering Enterprise being a Close Corporation, a **certified copy of the Founding Statement** of such corpora - tion must be attached to this tender.*

ENTERPRISE STAMP (If Any)

T2.3 AUTHORITY FOR CONSORTIA OR JOINT VENTURES TO SIGN TENDER

RESOLUTION of a meeting of the Board of *Directors / Members / Partners of:

_____

_____

(*Legally correct full name and registration number, if applicable, of the Enterprise)*

held at *(town)*: _____ on *(date)*: _____

RESOLVED that:

1. The Enterprise submits a Tender, in consortium/Joint Venture with the following Enterprises:

   _____

   _____

   (List all the legally correct full names and registration numbers, if applicable, of the Enterprises forming the Consortium/Joint Venture)

   to the KZN Department of Public Works in respect of the following project:

   KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

   Tender Number: **ZNTM01130W**

2. * Mr. / Mrs. / Ms.: _____ in

   *his/her Capacity as: _____ *(Position in the Enterprise)*

   and who will sign as follows: _____
   be, and is hereby, authorised to sign a consortium/joint venture agreement with the parties listed under item 1 above, and any and all other documents and/or correspondence in connection with and relating to the consortium/joint venture, in respect of the project described under item 1 above.

3. The Enterprise accepts joint and several liability with the parties listed under item 1 above for the due fulfilment of the obligations of the joint venture deriving from, and in any way connected with, the Contract to be entered into with the Department in respect of the project described under item 1 above.
4. The Enterprise chooses as its *domicilium citandi et executandi* for all purposes arising from this joint venture agreement and the Contract with the Department in respect of the project under item 1 above:

   Physical address: _____

   _____

   _____

   _____ (Postal Code)

   Postal Address: _____

   _____

   _____

   _____ (Postal Code)

Telephone number: *(Dialling Code followed by number)* _____

Fax number: *(Dialling Code followed by number)* _____

Email Address : _____

***BOARD OF DIRECTORS / MEMBERS / PARTNERS in Consortium of Joint Venture**

	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Note:

*1. * Delete which is not applicable.*

2. NB. This resolution / Power of Attorney must be signed by all the Directors / Members / Partners of the Tendering Enterprise.

3. Should the number of Directors / Members/Partners exceed the space available above, additional names and signatures must be supplied on a separate page.

ENTERPRISE STAMP (If Any)

Deemed to satisfy joint venture arrangements	Designation
Grading 2 + Grading 2 + Grading 2	= 3
Grading 3 + Grading 3 + Grading 3	= 4
Grading 4 + Grading 4	= 5
Grading 4 + Grading 3 + Grading 3	= 5
Grading 5 + Grading 5	= 6
Grading 5 + Grading 4 + Grading 4	= 6
Grading 6 + Grading 6	= 7
Grading 6 + Grading 5 + Grading 5	= 7
Grading 7 + Grading 7 + Grading 7	= 8
Grading 8 + Grading 8 + Grading 8	= 9

Tenderers who envisage entering into a Joint Venture shall complete a submit a Joint Venture Agreement (see copy of CIDB's agreement elsewhere in this document) with this Tender.

THE CIDB JOINT VENTURE GRADING DESIGNATION CALCULATOR sums the capacity of all joint venture partners and calculates a grading designation for the joint venture

T2.4 SPECIAL RESOLUTION OF CONSORTIA OR JOINT VENTURES

RESOLUTION of a meeting of the duly authorised representatives of the following legal entities who have entered into a consortium/joint venture to jointly tender for the project mentioned below: (*legally correct full names and registration numbers, of the Enterprises forming a Consortium/Joint Venture)*

_____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

6. _____

_____

7. _____

_____

8. _____

_____

held at: _____ *(place)* on _____ *(date)*

RESOLVED that:

A. The above-mentioned Enterprises submits a Tender in Consortium/Joint Venture to the KZN Department of Public Works in respect of the following project:

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

Tender Number: **ZNTM01130W**

Project Code: **073636**

B. Mr/Mrs/Ms: _____ in

*his/her Capacity as: _____ *(Position in the Enterprise)*

and who will sign as follows: _____
be, and is hereby, authorised to sign the Tender, and any and all other documents and/or correspondence in connection with and relating to the Tender, as well as to sign any Contract, and any and all documentation, resulting from the award of the Tender to the Enterprises in Consortium/Joint Venture mentioned above.

C. The Enterprises constituting the Consortium/Joint Venture, notwithstanding its composition, shall conduct all business under the name and style of:

_____

D. The Enterprises to the Consortium/Joint Venture accept joint and several liability for the due fulfilment of the obligations of the Consortium/Joint Venture deriving from, and in any way connected with, the Contract entered into with the Department in respect of the project described under item A above.

E. Any of the Enterprises to the Consortium/Joint Venture intending to terminate the consortium/joint venture agreement, for whatever reason, shall give the Department 30 days written notice of such intention. Notwithstanding such decision to terminate, the Enterprises shall remain jointly and severally liable to the Department for the due fulfilment of the obligations of the Consortium/Joint Venture as mentioned under item D above.

F. No Enterprise to the Consortium/Joint venture shall, without the prior written consent of the other Enterprises to the Consortium/Joint Venture and of the Department, cede any of its rights or assign any of its obligations under the consortium/joint Venture and of the Department, cede any of its rights or assign any of its obligations under the consortium/joint venture agreement in relation to the Contract with the Department referred to herein.

G. The Enterprises choose as the *domicilium citandi et executandi* of the consortium/joint venture for all purposes arising from the consortium/joint venture agreement and the Contract with the Department in respect of the project under item A above:

Physical address: _____

_____

_____

_____ (Postal Code)

Postal Address: _____

_____

_____

_____ (Postal Code)

Telephone number: *(Dialling Code followed by number)* _____

Fax number: *(Dialling Code followed by number)* _____

Email Address : _____

***BOARD OF DIRECTORS / MEMBERS / PARTNERS in Consortium of Joint Venture**

	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Note:

1. ** Delete which is not applicable.*

2. ***NB.*** *This resolution / Power of Attorney must be signed by all the Duly Authorised Representatives of the Legal Entities to the Consortium/Joint Venture submitting this Tender.*
3. *Should the number of Duly Authorised Representatives of the Legal Entities joining forces in this Tender exceed the space available above, additional names and signatures must be supplied on a separate page.*
4. *Resolutions, duly completed and signed, from the separate Enterprises who participate in this Consortium/Joint Venture must be attached to the Special Resolution.*

T2.5 JOINT VENTURES INVOLVEMENT DECLARATION

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

DECLARATION RELATING TO A TENDER SUBMITTED BY A JOINT VENTURE :

I/We the undersigned parties do hereby declare that our respective involvement in the Works, of which I/we tender by Joint Venture, would be as follows :-

Party No. 1	
CENTRAL SUPPLIERS DATABASE REGISTRATION NO:	
TenderDERS CIDB REGISTRATION NUMBER:	
Name	
Address	
Percentage involvement	%

Party No. 2	
CENTRAL SUPPLIERS DATABASE REGISTRATION NO:	
TENDERERS CIDB REGISTRATION NUMBER:	
Name	
Address	
Percentage involvement	%

Party No. 3	
CENTRAL SUPPLIERS DATABASE REGISTRATION NO:	
TenderDERS CIDB REGISTRATION NUMBER:	
Name	
Address	
Percentage involvement	%

Signed - Party No. 1

I/We *(Full Name)* _____

duly authorised in my capacity as _____

of *(Enterprise name)* : _____

do jointly and severally accept responsibility for the due performance of the Works contained in the above project should such Tender submitted by the Joint Venture be accepted.

_____ _____

Signed by Authorised Representative Date

Signed - Party No. 2

I/We *(Full Name)* _____

duly authorised in my capacity as _____

of *(Enterprise name)* : _____

do jointly and severally accept responsibility for the due performance of the Works contained in the above project should such tender submitted by the Joint Venture be accepted.

_____ _____

Signed by Authorised Representative Date

Signed - Party No. 3

I/We *(Full Name)* _____

duly authorised in my capacity as _____

of *(Enterprise name)* : _____

do jointly and severally accept responsibility for the due performance of the Works contained in the above project should such tender submitted by the Joint Venture be accepted.

_____ _____

Signed by Authorised Representative Date

T2.6 SCHEDULE OF PROPOSED SUBCONTRACTORS

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

We notify you that it is our intention to employ the following Subcontractors for work in this contract. The Subcontractors will all be CIDB registered and their CIDB Registration number shall be submitted below.

If we are awarded a contract we agree that this notification does not change the requirement for us to submit the names of proposed subcontractors in accordance with requirements in the contract for such appointments. If there are no such requirements in the contract, then your written acceptance of this list shall be binding between us.

We confirm that all subcontractors who are contracted to construct a house **are registered as home builders with the National Home Builders Registration Council**.

No	Name and address of proposed Subcontractor	Nature and extent of work	Year Completed	Value (R):	Contact Tel No:	Previous experience with Subcontractor
1						
	CIDB Registration Number:					
2						
	CIDB Registration Number:					
3						
	CIDB Registration Number:					
4						
	CIDB Registration Number:					
5						
	CIDB Registration Number:					

Name of authorised representative	**Signature**	**Capacity**	**Date**
Name of Enterprise:			

T2.7 CAPACITY OF TENDERER			
Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

1. **WORK CAPACITY:** (The Tenderer is requested to furnish the following capacity particulars and to attach additional pages if more space is required. Failure to furnish the particulars may result in the Tender being disregarded.)

1.1. **Artisans and Employees:** *(Artisans and Employees to be ,or are ,employed for this project)*

Categories of Employee - Key Personnel (part of Business Enterprise)	**Professional Registration No.**	**Date of Employment**	**Number**
Site Agent			
Project Manager			
Foreman			
Quality Control & Safety Officer-Construction Supervisor			
Artisans			
Unskilled employees			
Others			

1.2. **Provide full particulars of the following Assets:** *(Assets owned and to be hired - Indicate owned assets)*

Machinery	**Plant**	**Equipment**	**Vehicles**

1.3. Workshops:

Address of Main Workshop:	Address of Regional Workshop (If Applicable):

1.4. **Other offers submitted at time of this tender for which results are pending:**
(Any other client's tender must also be included)

Tender No.	Project Name	Client Name & Contact No.	Value Tendered in R's	Date Tender submitted	Contact Detail

2. PARTICULARS OF THE TENDERERS CURRENT AND PREVIOUSLY COMPLETED COMMITMENTS:

2.1. Current private sector projects: *(List the 5 projects closest to the contractor grading designation of this project)*

1	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Scheduled date of completion	
2	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Scheduled date of completion	
3	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Scheduled date of completion	
4	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Scheduled date of completion	
5	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Scheduled date of completion	

2.2. Current Government sector projects: *(List the 5 projects closest to the contractor grading designation of this project)*

1	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Scheduled date of completion	
2	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Scheduled date of completion	
3	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Scheduled date of completion	
4	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Scheduled date of completion	
5	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Scheduled date of completion	

2.3. Previously completed projects: *(List the 5 projects closest to the contractor grading designation of this project)*

1	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Date completed	
2	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Date completed	
3	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Date completed	
4	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Date completed	
5	Project Name		Date of commencement	
	Place (town)		Contract Amount (R)	
	Reference / Contact person		Contract period	
	Contact Tel. No.		Date completed	

Name of Tenderer	Signature of authorised representative	Date

T2.8 FINANCIAL STANDING AND OTHER RESOURCES OF BUSINESS DECLARATION

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

(a) Based on the track record determined on the Minimum Average Annual Turnover coupled to the assessed Works Capabilities of Contracting Enterprises, the Construction Industry Development Board (CIDB) awards Grading Designations and accordingly registers it on the system.

(b) However, it regularly occurs that a Contractor will at the same time submit tenders for a number of projects that are advertised during an overlapping period. Moreover, the Contractor may be busy with a Contract that is of the registered CIDB Grading Designation (value) or is even attending to a number of smaller valued Contracts.

(c) It therefore becomes the prerogative of a Tenderer in such instances to prove to the Department that the Enterprise has the capacity in every respect to attend to more than one (1) contract at a time.

(d) A Tenderer who wishes to be considered for this tender Contract award, over and above other tenders that they have submitted, shall submit when requested by the DoPW the necessary proof that:

(i) he/she has access to additional finance (inclusive of a PERFORMANCE GUARANTEE BY A REGISTERED FINANCIAL INSTITUTION),

(ii) he/she has additional Human Resources available to successfully complete this project.

(iii) he/she has adequate Equipment, Plant and Machinery that all of the above can, undoubtedly, be sourced for this tender. (Please submit to the DoPW the name and contact details of the supplier if the Tenderer is going to hire Equipment, Plant or Machinery, when requested.)

(e) Tenderer to submit their latest 12 months audited financial statements with the returnable documents.

I, the undersigned, _____

(name of person authorized to sign on behalf of the Tenderer

understand that it is the responsibility of the Tenderer to prove and provide when requested by the DoPW, evidence of the good Financial Standing of the Business to complete the Contract successfully.

Furthermore, it is understood that failure to provide when requested by DoPW, at least the information as stated in paragraphs (d)(i)(ii) AND (iii) above will not enable the Evaluation Team to assess the CURRENT financial standing of the Business and the failure to provide said information when requested will, therefore, invalidate the Tender.

I accept and understand that the KZN Department of Public Works, as representative of the Provincial Administration of KwaZulu-Natal in this tender, may act against me and the Tenderer, jointly and severally, should this declaration and/or any information provided be found to be false.

Duly signed at…… on this the….. day of……. 20..

Full Name of Signatory	Name of Enterprise
Capacity of Signatory	Signature of authorised representative

T2.9 PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022

Project Title:	KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMEN
Tender Number:	ZNTM01130W
Project Code:	073636

SBD 6.1

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

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

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

1. GENERAL CONDITIONS

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

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

1.2 **To be completed by the organ of state**

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

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

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

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

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

(a) Price; and

(b) Specific Goals.

1.4 **To be completed by the organ of state:**

The maximum points for this tender are allocated as follows:

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

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

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

2. DEFINITIONS

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

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

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

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

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

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. **POINTS AWARDED FOR PRICE**

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

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

80/20 or 90/10

$Ps=80(1-(Pt-P\ min)/(P\ min))$ or $Ps=90(1-(Pt-P\ min)/(P\ min))$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest acceptable tender

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

3.2.1. **POINTS AWARDED FOR PRICE**

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

80/20 or 90/10

$Ps=80(1+(Pt-P\ max)/(P\ max))$ or $Ps=90(1+(Pt-P\ max)/Pmax)$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

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

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

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

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

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

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

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

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

The specific goals allocated points in terms of this tender	Number of Points allocated (90/10 system) (to be completed by the Organ of State)	Number of Points allocated (80/20 system) (to be completed by the Organ of State)	Number of points claimed (90/10 system) (To be completed by the tenderer)	Number of points claimed (80/20 system) (To be completed by the tenderer)
••"Ownership by People who are Women Documentary Proof Required: 1) Certified Copy of Identity document/s 2) SANAS Approved B-BBEE Certificate or Original of Sworn Affidavit; signed and dated by Commissioner of Oaths□□		10		
•"Ownership by People who are Youth Documentary Proof Required: 1)Certified copy of Identity Document/s 2) SANAS Approved B-BBEE Certificate or Original of Sworn Affidavit; signed and dated by Commissioner of Oaths"		10		

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3. Name of company/firm.……

4.4. Company Registration Number :……

4.5. TYPE OF COMPANY/ FIRM

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

[TICK APPLICABLE BOX]

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

i) The information furnished is true and correct;

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

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

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

(a) disqualify the person from the tendering process;

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

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

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

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

……

SIGNATURE(S) OF TENDERER(S)
SURNAME AND NAME: ……
DATE: ……
ADDRESS: ……
……
……
……

T2.10 SITE INSPECTION MEETING CERTIFICATE			
Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**
Site Inspection Date:		**######**	

This is to certify that I, _____
(Name of authorised Representative)

representing _____
(Name of Enterprise)

visited the site on: _____ *(Date)*

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

I declare that the representative, named above, is my authorised representative and **not** a third party agent and that my representative's attending of this site meeting, shall be deemed conclusive proof that my Enterprise are fully aware of what was said and discussed at this meeting.

Name of Tenderer	Signature	Date

Name of DOPW Representative	Signature	Date

This form is only to be completed when applicable to the tender and if a Compulsory Briefing meeting has been called.

Departmental Stamp:

T2.11 BIDDER'S DISCLOSURE - SBD 4

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS
ZNTM01130W

DECLARATION OF INTEREST

1 Any legal person, including persons employed by the state, or persons having a kinship with persons employed by the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid (includes a price quotation, advertised competitive bid, limitied bid or proposal). In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons employed by the state, or to persons connected with or related to them, it is required that the bidder or his/her authorised representative declare his/her position in relation to the the evaluation/ adjudicating authority and/or take an oath declaring his/her interst. Where :-

- the bidder is employed by the state; and/or

- the legal person on whose behalfthe bidding document is signed, has a relationship with persons/a person who are/is involved in the evaluation and or adjudication of the bid(s), or where it is known that such a relationship exists between the person or persons for or on whose behalf the declarant acts and persons who are involved with the evaluation and or adjudication of the bid.

2 **In order to give effect to the above, the following questionaire must be completed and submitted with the bid**

2.1 Full Name of bidder or his or her representative:….....

2.2 Identity Number:….....

2.3 Position occupied in the company (director, shareholder etc):….....

2.4 Company Registration Number:….....

2.5 Tax Reference Number:….....

2.6 VAT Registration Number:….....

"Sate" means-
national or provincial department, national or provincial entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No. 1 of 1999);

(b) any municiplaity or municiplaity entity

(c) provincial legisature

(d) national Assembly or the national council of provinces; or

(e) Parliament

2,7 Are you or nay 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/ shareholder/ member: ….....
Name of sate institution to which the person is connected:….....
Position occupied in the state institution:….....

Any other particulars:….....

2,8 Did you or your spouse, or any of the companies directors/ shareholders/ memebers ot their spouses conduct business with the stste in the previous twelve months? **YES/ NO**

2.8.1 If so, furnish the particulars….....

2.9 Do you, or nay 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 the 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 the bidder and any person employed by the state who may be involved with the evalution or adudication of this bid **YES/ NO**

2.11 Do you or any of the directors /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….....

I, THE UNDERSIGNED (NAME)….....

CERTIFY THAT THE INFORMATION IN PARAGRAPHS 2.1 TO 2.11.1 ABOVE IS CORRECT
I ACCEPT THAT THE STATE MAY ACT AGAINST ME IN TERMS OF PARAGRAPH 23 OF THE GENERAL CONDITIONS OF CONTRACT SHOULD THIS DECLARATION PROVE TO BE FALSE

…..... …..
Signature Date

…..... …..
Position Name of Bidder

T2.12 RECORD OF ADDENDA TO TENDER DOCUMENTS

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

The undersigned confirm that the following communications received from the employer before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer:

	Date	Title or Details	No. of Pages
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			

Attach Additional Pages if more space is required

Tenderer to attach proof of receipt of above listed addenda

Signed		**Date**	
Name		**Position**	
Tenderer			

T2.13 PARTICULARS OF ELECTRICAL CONTRACTOR			
Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

Name of Electrical Contractor: _____

Address: _____

_____

_____

_____

Telephone Number: _____
(Area Code)(Number)

Fax Number: _____
(Area Code)(Number)

Registration number at the Electrical Contracting Board of S.A.:	

Name of authorised representative	**Signature**	**Date**

T2.14 SCHEDULE FOR IMPORTED MATERIALS AND EQUIPMENT

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

This schedule should be completed by the tenderer. *(Attach additional page(s) if more space is required)*

Item	Material / Equipment	Quotation (Excluding VAT)
1		R
2		R
3		R
4		R
5		R
6		R

The Contractor shall list imported items, materials and/or equipment which shall be excluded from the Contract Price Adjustment Provisions (if applicable) and shall be adjusted in terms of currency fluctuations only. Copies of the supplier's quotations for the items, materials or equipment (provided that such costs shall not be higher than the relevant contract rate as listed above) should be lodged with the Principal Agent / Engineer of the Department of Public Works within 60 (sixty) days from the date of acceptance of the tender. No adjustment of the local VAT amount, nor the contractor's profit, discount, mark-up, handling costs, etc. shall be allowed. (See P&G E16)

These net amounts will be adjusted as follows:

FORMULA:

The net amount to be added to or deducted from the contract sum:

$$A = V\left(\frac{Z}{Y} - 1\right)$$

A = the amount (R) of adjustment

V = the net amount (supplier's quotation) (R) of the imported item

Y = exchange rate 14 days prior to closing date of tender submission

Z = exchange rate on the date of the Bill of Lading* of exporters invoice.

** A bill of lading (sometimes abbreviated as B/L or BoL) is a document issued by a carrier which details a shipment of merchandise and gives title of that shipment to a specified party. Bills of lading are one of three important documents used in international trade to help guarantee that exporters receive payment and importers receive merchandise. A straight bill of lading, which is referred to above, is used when payment has been made in advance of shipment and requires a carrier to deliver the merchandise to the appropriate party. It is therefore the date of the paid up invoice when the shipment leaves the exporter's location.*
[http://en.wikipedia.org/wiki/Bill_of_lading]

Name of authorised representative	Signature	Date

T2.15a LATEST 12 MONTH ANNUAL FINANCIAL STATEMENT

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

ATTACH A CERTIFIED COPY OF THE ANNUAL FINANCIAL STATEMENT OF THE COMPANY FOR THE PAST FINANCIAL YEAR TO THIS PAGE FOR ADJUDICATION PURPOSES

NOTE

In the case of a Tender by a Joint Venture, certified copies of the annual financial statements of the past financial year in respect of each party to the Joint Venture must be attached to this page

ATTACH COMPANY LATEST 12 MONTHS ANNUAL FINANCIAL STATEMENTS TO THIS PAGE

T2.16 EQUIPMENT SCHEDULES

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

The Tenderer shall complete the following schedules giving details of the various items of materials or equipment that he includes in his offer.

TECHNICAL DATA: MINIATURE SUBSTATIONS

Manufacturer:	
Model number:	
Serial number:	

Primary Voltage	
Secondary Voltage	
KVA	
Vector Group	
Transformer type	
Ring main type	
Rating	
Type of LV circuit breakers fitted	
Type of LV main switch and type of protection	
0	
0	
Sound pressure level	
Standard Compliance	

Project Code: **073636**

EQUIPMENT SCHEDULES

TECHNICAL DATA: **RING MAIN UNITS**

Manufacturer	
Model	
Ring main type	
Configuration	
FAT documentation as suitable for application	
Current carrying capacity	
0	
0	
Agent	
Telephone number of Agent	
Brochure enclosed	Yes/No

TECHNICAL DATA: **PRIMARY SWITCHGEAR**

Manufacturer	
Model	
Dimension /Size	
Electrical nominal voltage	
IP rating	
Configuration	
FAT documentation as suitable for application	
Current carrying capacity	0
0	
Agent	
Telephone no of Agent	
Brochure enclosed	Yes/No

Project Code: **073636**

EQUIPMENT SCHEDULES

TECHNICAL DATA: **0**

Manufacturer	
Size	
Range	
Voltage	
Battery Back Up Time	
Finish	
Agent	
Telephone number	
Brochure enclosed	Yes/No

Project Code: **073636**

EQUIPMENT SCHEDULES

TECHNICAL DATA: **0**

Manufacturer	
Panel thickness	
Load	
Stops	
Car Size	
Door Opening	
Door Type	
Speed	
Type of Drive	
Speed Control	
Type of Car and Landing Buttons	
Type of Landing Door Frames	
Type of Door	
Internal Finishes	
Pit	
Head Room	
Battery Type	
Method of joining panels	
Floor construction	
Standard Compliance	
Agent	
Telephone number of Agent	
Brochure enclosed	Yes/No

Project Code: **073636**

EQUIPMENT SCHEDULES

TECHNICAL DATA: **0**

0

Area:		
Manufacturer:		
	WCPU	
Model number:	Cooling Tower	
Serial number:	WCPU	
	Cooling Tower	
Voltage		V
Running amps		A
		kPA
System return gauge pressure		°C
		°C
Condenser water outlet temperature		m³/s
		°C
Blower unit air inlet temperature		0
Blower unit air flow rate		0
Conditioned room air temperature after 1 hour, Actual		0

T2.17 CONTRACTOR'S SAFETY, HEALTH AND ENVIRONMENTAL DECLARATION

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

In terms of Regulation 5(1)(h) of the Construction Regulations of February 2014 a Contractor may only be appointed to perform construction work if the Client is satisfied that the Contractor has the necessary competencies and resources to carry out the work safely in accordance with the Occupational Health and Safety Act, Act 85 of 1993 and the Construction Regulations of February 2014. In line with this requirement the Contractor is required to read through this document carefully, sign it and submit it with his/her Tender.

DECLARATION

1. I, the undersigned hereby declare and confirm that I am fully conversant with the Occupational Health and Safety Act, Act 85 of 1993 and the Construction Regulations of February 2014 and the Construction Safety, Health and Environmental Specifications attached to this document.
2. I hereby declare that my company and its employees has the necessary competency and resources to safely carry out the construction works under this contract in compliance with the Occupational Health and Safety Act, Act 85 of 1993, the Construction Regulations of February 2014 and the Construction Safety, Health and Environmental Specifications.
3. I hereby confirm that adequate provisions has been made in my Tender to cover the cost of all Safety, Health and Environmental duties and responsibilities imposed on me by the Occupational Health and Safety Act, Act 85 of 1993, the Construction Regulations of February 2014 and the Construction Safety, Health and Environmental Specifications.
4. I hereby undertake that if my Tender is accepted, to provide before commencement of the Works under the contract or as required by the Conditions of the Contract, a suitable and sufficiently documented Construction Safety, Health and Environmental Management Plan in accordance with Regulation 7(1)(a) of the Construction Regulations of February 2014, which shall be subject for approval by the Client.
5. I confirm that I may not commence with any part of construction work under the contract until my Construction Safety Health and Environmental Management Plan has been approved in writing by the Client.
6. I hereby confirm that copies of the following documentation will be kept on site for viewing and inspection purposes for the duration of the construction work:
   a) Client's Construction Safety, Health and Environmental Specification.
   b) Approved Construction Safety, Health and Environmental Plan.
   c) Occupational Health and Safety Act, Act 85 of 1993.
   d) Construction Regulations of February 2014.
7. I agree that my failure to complete and execute this declaration to the satisfaction of the Client will mean that I am unable to comply with the requirements of the Occupational Health and Safety Act, Act 85 of 1993 and the Construction Regulations of February 2014, and accept that my Tender will be rejected.

Duly signed at……. on this the….. day of……. 20…..

Full Name of Signatory	Name of Enterprise
Capacity of Signatory	Signature of authorised representative of Tenderer

T2.18 Compulsory Enterprise Questionnaire

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

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

Section 1: Name of enterprise:	
Section 2: VAT registration number, if any:	
Section 3: CIDB registration number, if any:	
Section 4: CSD Number:	

Section 5: Particulars of sole proprietors and partners in partnerships

Name*	Identity number*	Personal income tax number*

** Complete only if sole proprietor or partnership and attach separate page if more than 6 partners*

Section 6: Particulars of companies and close corporations

Company registration number	
Close corporation number	
Tax reference number	

Section 7: SBD4 issued by National Treasury must be completed for each tender and be attached as a tender requirement

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

i) authorizes the Employer to verify the tenderers tax clearance status from the South African Revenue Services that it is in order; □

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

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

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

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

Signed		**Date**	
Name			
Position			
Enterprise name			

T2.19 TAX COMPLIANCE STATUS (TCS) PIN TO VERIFY ON LINE COMPLIANCE SUPPLIER STATUS VIA SARS e-FILING

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

TAX CLEARANCE REQUIREMENTS

It is a condition of Tender that the taxes of the successful tenderer must be in order, or that satisfactory arrangements have been made with South African Revenue Service (SARS) to meet the tenderer's tax obligations. It is a condition of this Offer of Commission that your practice remains in good standing with SARS (South African Revenue Services) in terms of its tax clearance.

1. In order to meet this requirement Tenderders are required to apply via e-filing at any SARS branch office nationally. The Tax Complance Status (TCS) requirements are also applicable to foreign Tenderders / individuals who wish to submit tenders.
2. SARS will then furnish the tenderer with a Tax Compliance Status (TCS) **PIN** that will be valid for a period of 1 (one) year from the date of approval.
3. In tenders where Consortia / Joint Ventures / Sub-contractors are involved, each party must submit a separate Tax Compliance Status (TCS) PIN.
4. Application for Tax Compliance Status (TCS) PIN can be done via e-filing at any SARS branch office nationally or on the website www.sars.gov.za.
5. Tax Clearance Certificates may be printed via eFiling. In order to use this provision, taxpayers will need to register with SARS as eFilers through the website www.sars.gov.za.

IMPORTANT NOTICE

1. The South African Revinue Services (SARS) has phased out the issuing of paper Tax Clearance Certificates.
2. From 18 April 2016 SARS introduced an enhanced Tax Compliance (TCS) system.
3. The new system allows taxpayers to obtain a Tax Compliance Status (PIN), which can be utilised by authorised third parties to varify taxpayers compliance status online via SARS e-filing.
4. Tenderers are required to fill in clearly, legibly, in bold print and black ink the SARS (TCS) PIN number and Tax Reference number in the space hereunder:

Tax Compliance Status(TCS) PIN Number	
Company / Tendering Entity Tax Reference Number	

Name of Tenderer: .....

Signature of tenderer: .....

Date: .....

T2.20 CERTIFIED PROOF OF GOOD STANDING WITH THE COMPENSATION COMMISSIONER

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

ATTACH A CERTIFIED COPY OF PROOF, THAT THE TENDERER IS IN GOOD STANDING WITH THE COMPENSATION COMMISSIONER, TO THIS PAGE FOR ADJUDICATION PURPOSES

NOTE

In the case of a Tender by a Joint Venture, certified copies of proof of Good Standing with the Compensation Commissioner in respect of each party to the Joint Venture must be attached to this page

T2.21 - FORM OF OFFER AND ACCEPTANCE

Tender no: ZNTM01130W

OFFER

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

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

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

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

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VALUE ADDED TAX IS:

Amount (in words):	
Amount in figures:	**R**

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

Signature (s)				
Name (s)				
Capacity				
For the tenderer				
	(Name and address of tenderer)			
Name and signature of witness			**Date**	

ACCEPTANCE

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

The terms of the contract, are contained in:

Part C1	Agreement and Contract Data, (which includes this agreement)
Part C2	Pricing data

Part C3	Scope of work.
Part C4	Site information and drawings and documents or parts thereof, which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the returnable schedules as well as any changes to the terms of the offer agreed by the tenderer and the employer during this process of offer and acceptance, are contained in the schedule of deviations attached to and forming part of this form of offer and acceptance. No amendments to or deviations from said documents are valid unless contained in this schedule.

The tenderer shall within two weeks after receiving a completed copy of this agreement, including the schedule of deviations (if any), contact the employer's agent (whose details are given in the contract data) to arrange the delivery of any securities, 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 tenderer receives one fully completed original copy of this document, including the schedule of deviations (if any). Unless the tenderer (now contractor) within five (5) working days of the date of such receipt notifies the employer in writing of any reason why he/she 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 employer)		
Name and signature of witness			

Schedule of Deviations

Notes:
1. The extent of deviations from the tender documents issued by the employer before the tender closing date is limited to those permitted in terms of the conditions of tender.
2. A tenderer's covering letter shall not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid, become the subject of agreements reached during the process of offer and
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties becomes an obligation of the contract shall also be recorded
4. Any change or addition to the tender documents arising from the above agreements and recorded here, shall also be incorporated into the final draft of the Contract.

1.1.1. Subject:
Details:

1.1.2. Subject:
Details:

1.1.3. Subject:
Details:

1.1.4. Subject:
Details:

By the duly authorised representatives signing this agreement, the employer and the tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to the documents listed in the tender data and addenda thereto as listed in the returnable schedules, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the employer during this process of offer and acceptance.

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

T2.21a CONFIRMATION OF RECEIPT

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

Tender no.:	**ZNTM01130W**	**Project Code:**	**073636**

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

the _____ (day)

of _____ (month)

_____ (year)

at _____ (Place)

For the Contractor:

_____
Signature

_____
Name

_____
Capacity

Signature and name of witness:

_____
Signature

_____
Name

T2.22 - FINAL BILL OF QUANTITY SUMMARY

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

SUMMARY BILL OF QUANTITIES

BILL NO.2 - GENERAL ITEMS	Page 133-135
BILL NO 3 - REMOVAL OF EXISTING WORKS	Page 136-139
BILL NO 4 - CONCRETE, FORMWORK AND REINFORCEMENT	Page 161-163
BILL NO 5 - WATERPROOFING	Page 164
BILL NO 6 - ROOF COVERINGS	Page 165
BILL NO 7 - CARPENTRY AND JOINERY	Page 166
BILL NO 8 - IRONMONGERY	Page 168
BILL NO 9 - PLASTERING, PLUMBING AND GLAZING	Page 169
BILL NO. 10 - PAINTWORK	Page 170
BILL NO 11 - EXTERNAL WORKS	Page 171
BILL NO 12 - TRENCHING AND MANHOLES	Page 172
BILL NO 13 - CABLING, BUSBARS AND TERMINATIONS	Page 173 - 177
BILL NO 14 - MV SWITCHGEAR AND MINISUBS	Page 178 - 184
BILL NO 15 - LOAD BALANCING	Page 185
BILL NO 16 - SMALL POWER AND LIGHTING	Page 186
BILL NO 17 - EARTHING	Page 187 - 189
TOTAL (EXCLUDING VAT)	Page 190

T2.23 - PROOF OF PAID MUNICIPAL RATES & TAXES

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

ATTACH PROOF OF PAID MUNICIPAL RATES & TAXES TO THIS PAGE FOR ADJUDICATION PURPOSES

NOTE

In the case of a Quotation by a Joint Venture, proof of paid municipal rates and taxes for each member of the Joint Venture should be attached to this form.

T2.24 - CERTIFIED PROOF OF VALID UIF REGISTRATION

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

ATTACH A CERTIFIED COPY OF PROOF, THAT THE TENDERER IS IN GOOD STANDING WITH THE **UIF** TO THIS PAGE FOR ADJUDICATION PURPOSES

NOTE

In the case of a Tender by a Joint Venture, certified copies of proof of Good Standing with the **UIF** in respect of each party to the Joint Venture must be attached to this page

The contractor must submit proof of UIF Contributions made to the fund to the Principal Agent on a monthly basis for the duration of the contract.

Should the contractor default on his monthly payments, the Employer will pay the outstanding payments due and the contractor will be liable for payments made by the Employer on behalf of the contractor, plus any additional cost associated with this process.

T2.25 THE NATIONAL INDUSTRIAL PARTICIPATION PROGRAMME

This document must be signed and submitted together with your tender

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 tenderers (contractors) are required to, immediately after the award of a contract that is in excess of R10 million (ten million Rands), submit details of such a contract to the DTI for reporting purposes.

2,2 The purpose for reporting details of contracts in excess of the amount of R10 million (ten million Rands) is to cater for multiple contracts for the same goods, works or services; renewable contracts and multiple suppliers for the same goods, works or services under the same contract as provided for in paragraphs 1.1.(b) to 1.1. (d) above.

3 Tender SUBMISSION AND CONTRACT REPORTING REQUIREMENTS OF TenderDERS AND SUCCESSFUL TenderDERS (CONTRACTORS)

3,1 Tenderders are required to sign and submit this Standard Tenderding Document (SBD 5) together with the Tender on the closing date and time.

3,2 In order to accommodate multiple contracts for the same goods, works or services; renewable contracts and multiple suppliers for the same goods, works or services under the same contract as indicated in sub-paragraphs 1.1 (b) to 1.1 (d) above and to enable the DTI in determining the NIP obligation, successful Tenderders (contractors) are required, immediately after being officially notified about any successful Tender with a value in excess of R10 million (ten million Rands), to contact and furnish the DTI with the following information:

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

3,3 The information required in paragraph 3.2 above must be sent to the Department of Trade and Industry, Private Bag X 84, Pretoria, 0001 for the attention of Mr. Elias Malapane within five (5) working days after award of the contract. Mr. Malapane may be contacted on telephone (012) 394 1401, facsimile (012) 394 2401 or e-mail at Elias@thedti.gov.za for further details about the programme.

4 PROCESS TO SATISFY THE NIP OBLIGATION

4,1 Once the successful Tenderder (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 Tenderder (contractor) and, therefore, does not involve the purchasing institution.

Tender number: _____ Closing date: _____

Name of tenderer: _____

Postal address: _____

_____

Signature: _____ Name (in print): _____

Date: _____

T2.26 - CERTIFIED PROOF OF REGISTRATION ON CENTRAL SUPPLIERS DATABASE

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Bid no:	**ZNTM01130W**	**Project Code:**	**073636**

ATTACH A CERTIFIED COPY OF PROOF, THAT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIERS DATABASE TO THIS PAGE FOR ADJUDICATION PURPOSES

NOTE

In the case of a Tender by a Joint Venture, certified copies of proof of registration on the Central Suppliers Data Base in respect of each party to the Joint Venture must be attached to this page

T2.27 - CERTIFIED PROOF OF CIDB REGISTRATION NUMBER

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

ATTACH A CERTIFIED COPY OF PROOF, THAT THE TENDERER IS REGISTERED WITH THE CONSTRUCTION INDUSTRY DEVELOPMENT BOARD (CIDB) TO THIS PAGE FOR ADJUDICATION PURPOSES

NOTE

In the case of a Tender by a Joint Venture, certified copies of proof of registration with the CIDB in respect of each party to the Joint Venture must be attached to this page

T2.28 - PROOF OF PAYMENT OF TENDER DEPOSIT

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

ATTACH A COPY OF PROOF OF PAYMENT WHERE AVAILABLE OF THE TENDER DEPOSIT BY THE TENDERER, TO THIS PAGE FOR ADJUDICATION PURPOSES

Not required when downloaded from E-Tender Portal and printed

NOTE

In the case of a Tender by a Joint Venture a certified copy of proof of payment where available of the tender deposit is only necessary in respect of any one party to the Joint Venture and must be attached to this page

T2.29 CONTRACT FORM - PURCHASE OF GOODS/WORKS-Part 1

THIS FORM MUST BE FILLED IN DUPLICATE BY BOTH THE SUCCESSFUL TENDERER (PART 1) AND THE PURCHASER (PART 2). BOTH FORMS MUST BE SIGNED IN THE ORIGINAL SO THAT THE SUCCESSFUL TENDERER AND THE PURCHASER WOULD BE IN POSSESSION OF ORIGINALLY SIGNED CONTRACTS FOR THEIR RESPECTIVE RECORDS.

PART 1 (TO BE FILLED IN BY THE TENDERER)

1. I hereby undertake to supply all or any of the goods and/or works described in the attached tendering documents to Head: Public Works (Department of Public Works: Province of KwaZulu-Natal) in accordance with the requirements and specifications stipulated in tender number ZNTM01130W at the price/s quoted.
2. The following documents shall be deemed to form and be read and construed as part of this agreement:

   (i) Tendering documents, viz
   - Invitation to tender;
   - Tax Compliance Status (TCS) **PIN**;
   - Pricing schedule(s);
   - Technical Specification(s);
   - Preference claims for SPECIFIC GOAL/S, for this tender in terms of the Preferential Procurement Regulations 2022;
   - Bidder's Disclosure;
   - Special Conditions of Contract;

   (ii) General Conditions of Contract for construction works Edition 2 - GCC2010; and
3. (iii) Other (specify)
4. I confirm that I have satisfied myself as to the correctness and validity of my Tender; that the price(s) and rate(s) quoted cover all the goods and/or works specified in the Tenderding documents; that the price(s) and rate(s) cover all my obligations and I accept that any mistakes regarding price(s) and rate(s) and calculations will be at my own risk.
5. I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this agreement as the principal liable for the due fulfilment of this contract.
6. I declare that I have no participation in any collusive practices with any Tenderder or any other person regarding this or any other Tender.

I confirm that I am duly authorised to sign this contract.

NAME (PRINT): _____

CAPACITY: _____

SIGNATURE: _____

NAME OF FIRM: _____

DATE: _____

Witnesses:

1. _____

2. _____

Date:

T2.30 CONTRACT FORM - PURCHASE OF GOODS/WORKS-Part 2

PART 2 (TO BE FILLED IN BY THE PURCHASER)

1. I _____ in my capacity as

_____

accepts your tender under reference ZNTM01130W dated _____for the supply of goods/works indicated hereunder and/or further specified in the annexure(s).

2. An official order indicating delivery instructions is forthcoming.
3. I undertake to make payment for the goods/works delivered in accordance with the terms and conditions of the contract, within 30 (thirty) days after receipt of an invoice accompanied by the delivery note.

ITEM NO.	PRICE (ALL APPLICABLE TAXES INCLUDED)	BRAND	DELIVERY PERIOD	B-BBEE STATUS LEVEL OF CONTRIBUTION	MINIMUM THRESHOLD FOR LOCAL PRODUCTION AND CONTENT (if applicable)

4. I confirm that I am duly authorised to sign this contract.

SIGNED AT _____ON_____
[Place] *[Date]*

NAME (PRINT): _____

SIGNATURE: _____

OFFICIAL STAMP:

Witnesses:

1. _____

2. _____

Date:

T2.31 - OHSE PLAN STRUCTURE			
Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

A detailed OHSE Plan is to be submitted by the successful tenderer as per Construction Regulation 7(1)(a). The following are the minimum standard legal documentation that must form part of the OHSE Plan based on the risks attached in executing this project titled;

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

Refer to Annexure 6

T2.32 - OHSE CLIENT SPECIFIC REQUIREMENTS	
Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**
Tender no:	**ZNTM01130W**
Project Code:	**073636**

Refer to Annexure 6

T2.33 - BASELINE RISK ASSESSMENT			
Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

EPWP No (If Applicable)

Refer to Annexure 6

T2.34 - Functionality Criteria

Indicate the functionality criteria -Functionality only used to determine level of response to the Terms of reference. (A minimum of 60% must be attained to qualify for evaluation in terms of price and preference points.)

Evaluation Criteria	Item	Documentation to be provided	Sub-Points	Weighting Factor
1.Schedule and proof of years of experience on similar projects	1.1 Schedule of projects similar in nature and value. (Minimum of 3 projects) completed in the last 10 years in the Electrical Engineering Works 5EP and above.	List of 3 Projects where Bidders must provide: 1.1.1 Award letters which include the value of the project and duration (3 points per letter) 1.1.2 Completion certificates for each project (2 points per Practical Completion) certificate. (05 points per project for full information)	3x3=9 2x3=6	15
	1.2 Reference Letter from Consultants / Client / Project Manager for projects of similar nature and value.	1.2.1 Bidders must provide reference letters for the submitted projects, commenting positively on the management of the project for each of the above 3 projects provided. See Annexure 13/ proforma	5x3=15	15
2. Experience and Resource capacity	2.2 Organogram, CVs and experience of resources proposed for the project.	2.2.1 Detailed project specific organogram that reflects names and roles, as per item 2.2.2. below . See Annexure 14/ proforma (15 points for full information)	15	

		2.2.2 Tenderer to submit the CV's indicating experience and relevant qualifications as per Project specific Organogram [To obtain points, a person must have relevant experience in the area of construction and Electrical works] - Construction Manager - Electrical Engineer registered with ECSA as PR Eng. or PR Tech. - Safety Officer registered with SACPCMP - Master Installation Electrician registered with Department of Labour	4x4=16	31
3. Financial Standing	3.1. Letter of Credit reference from suppliers and credit limits to be stipulated.	3.1.1 Signed letter of credit reference from relevant major supplier who supplies Switchgear, Transformer, Reactive Power Banks, Cables and Distribution Boards.Letter not older than 1 year must be on an official letterhead of the supplier signed and dated. Credit limits of R 3 million and above including VAT (minimum 3 letters) (5 points per credit letter dated and	3x5	15

4. Technical Approach and Methodology	4.1 Submission of a Project Specific Method Statement	Detailed statement of the proposed methodology of implementing the project without disturbing operation to the hospital. The following must be included: 4.1.1 List of all proposed Electrical specalist sub-contractors, including compliance certificate for electrician/s who will be directly involved on the project. (10 points for full information)	10	24
	4.2 Submission of detailed Project Specific Program	4.2.1 Submit detailed Project Specific Program, ie. Gantt Chart . The program must indicate the critical path, float, all major activities (from site handover to practical completion), and task durations. (14 points for full information)	14	
		TOTAL POINTS	**100**	
Bidders must score a minimum of 21 points from item 1 and 2 in order to proceed to item No 3 and 4		**Minimum functionality score to qualify for further evaluation.**	**60 Points**	

PART A
INVITATION TO TENDER - SBD 1

YOU ARE HEREBY INVITED TO TENDER FOR REQUIREMENTS OF THE KWA-ZULU NATAL DEPARTMENT OF WORKS					
TENDER NUMBER:	ZNTM01130W	**CLOSING DATE:**	46365	**CLOSING TIME:**	11:00
DESCRIPTION	KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS				
THE SUCCESSFUL TENDERER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT					
TENDER RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE TENDER BOX SITUATED AT *(STREET ADDRESS)*					
Southern Region Office **10 Prince Alfred Street** **Pietermaritzburg** **3200**					

SUPPLIER INFORMATION				
NAME OF TENDERER				
POSTAL ADDRESS				
STREET ADDRESS				
TELEPHONE NUMBER	CODE		NUMBER	
CELLPHONE NUMBER				
FACSIMILE NUMBER	CODE		NUMBER	
E-MAIL ADDRESS				
VAT REGISTRATION NUMBER				
	TCS PIN:		**CSD No:**	
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE (Tick YES or NO)	Yes		B-BBEE STATUS LEVEL SWORN AFFIDAVIT (Tick YES or NO)	Yes
	No			No
If YES, State the name of the verification agency accredited by SANAS				

ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	Yes		NO		ARE YOU A FOREIGN BASED SUPPLIER FOR **THE GOODS**	YES		NO	
	[IF YES ENCLOSE PROOF]				**(IF YES ANSWER PART B:3 BELOW)**				
SIGNATURE OF TENDERER					**DATE**				
CAPACITY UNDER WHICH THIS TENDER IS SIGNED (Attach proof of authority to sign this tender; e.g. resolution of directors, etc.)									
TOTAL NUMBER OF ITEMS OFFERED					**TOTAL TENDER PRICE (ALL INCLUSIVE)**				

TENDERING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:		**TECHNICAL INFORMATION MAY BE DIRECTED TO:**	
DEPARTMENT/ PUBLIC ENTITY	SCM Assistant Director	CONTACT PERSON	Mr N Dube
CONTACT PERSON	Ms N Zulu	TELEPHONE NUMBER	033 897 1329
TELEPHONE NUMBER	033 897 1442	FACSIMILE NUMBER	086 621 0613
FACSIMILE NUMBER		E-MAIL ADDRESS	ndabezinhle.dube@kznworks.gov.za
E-MAIL ADDRESS	nelisiwezulu@kznworks.gov.za		

PART B

TERMS AND CONDITIONS FOR TENDERING - SBD 1

1. TENDER SUBMISSION:

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

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

1.3. TENDERERS MUST REGISTER ON THE CENTRAL SUPPLIER DATABASE (CSD) TO UPLOAD MANDATORY INFORMATION NAMELY: (BUSINESS REGISTRATION/ DIRECTORSHIP/ MEMBERSHIP/IDENTITY NUMBERS; TAX COMPLIANCE STATUS; AND BANKING INFORMATION FOR VERIFICATION PURPOSES). B-BBEE CERTIFICATE OR SWORN AFFIDAVIT FOR B-BBEE MUST BE SUBMITTED TO TENDERING INSTITUTION.

1.4. WHERE A TENDERER IS NOT REGISTERED ON THE CSD, MANDATORY INFORMATION NAMELY: (BUSINESS REGISTRATION/ DIRECTORSHIP/ MEMBERSHIP/IDENTITY NUMBERS; TAX COMPLIANCE STATUS MAY NOT BE SUBMITTED WITH THE TENDER DOCUMENTATION. B-BBEE CERTIFICATE OR SWORN AFFIDAVIT FOR B-BBEE MUST BE SUBMITTED TO TENDERING INSTITUTION.

1.5. THIS TENDER IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT 2000 AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022, THE GENERAL CONDITIONS OF CONTRACT ARE THE CLAUSES CONTAINED IN THE GENERAL CONDITIONS OF CONTRACT (2010) (SECOND EDITION) PUBLISHED BY THE SOUTH AFRICAN INSTITUTION OF CIVIL ENGINEERING. COPIES OF THESE CONDITIONS OF CONTRACT MAY BE OBTAINED THROUGH MOST REGIONAL OFFICES OF THE SOUTH AFRICAN INSTITUTION OF CIVIL ENGINEERING, OR BY VISITING THEIR WEBSITE AT WWW.SAICE.ORG.ZA; AND, IF APPLICABLE, ANY OTHER LEGISLATION OR SPECIAL CONDITIONS OF CONTRACT.

2. TAX COMPLIANCE REQUIREMENTS

2.1 TENDERERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.

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

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

2.4 TENDERERS MAY ALSO SUBMIT A PRINTED TCS TOGETHER WITH THE TENDER.

2.5 IN TENDERS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE PROOF OF TCS / PIN / CSD NUMBER.

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

2.7 NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE, COMPANIES WITH DIRECTORS WHO ARE PERSONS IN THE SERVICE OF THE STATE, OR CLOSE CORPORATIONS WITH MEMBERS PERSONS IN THE SERVICE OF THE STATE.

3. QUESTIONNAIRE TO TENDERING FOREIGN SUPPLIERS

3.1. IS THE TENDERER A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?	YES		NO	
3.2. DOES THE TENDERER HAVE A BRANCH IN THE RSA?	YES		NO	
3.3. DOES THE TENDERER HAVE A PERMANENT ESTABLISHMENT IN THE RSA?	YES		NO	
3.4. DOES THE TENDERER HAVE ANY SOURCE OF INCOME IN THE RSA?	YES		NO	

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

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

PROVINCIAL ADMINISTRATION OF KWAZULU-NATAL
DEPARTMENT OF PUBLIC WORKS

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

BILLS OF QUANTITIES

with GCC for Construction Works - Second Edition 2010

CONTRACTUAL SECTION

ONE VOLUME APPROACH

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

Engineer/Principal Agent
Ibuya Consulting Engineers
P.O.Box 1692, Wandsbeck
Westville
Durban
3629
0312667332 - Tel Number
0312667340 - Fax Number
justin@ibuya.co.za

Electrical Engineer
Ibuya Consulting Engineers
P.O. Box 1692
Westville
3629
031266 7332 - Tel Number
031266 7340 - Fax Number
ibuya@ibuya.co.za

Employer:
Head: Public Works
KZN Department of Public Works
Private Bag X 9041
PIETERMARITZBURG
3200
Tel Number: 033 - 8971300
Fax Number: 033 - 8971399

Region:
Regional Manager
KZN Department of Public Works
X9041
Pietermarizburg
3200
Tel Number: 033-897 1421/1422
Fax Number: 033-897 1399

Tender Number: **ZNTM01130W**
CIDB Grading: **6EP or higher**
ECDP Number: **N/A**

Project Code: **073636**
Document Date: **09 December 2026**

Contracting Party: _____
CIDB Registration number: _____
Central Suppliers Database Registration Number: _____

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

THE CONTRACT

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

C1 - AGREEMENT AND CONTRACT DATA

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

FORM OF OFFER AND ACCEPTANCE

FORM OF OFFER AND ACCEPTANCE

Tender No - ZNTM01130W

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

C.1.1 - FORM OF OFFER AND ACCEPTANCE

THE OFFER AND ACCEPTANCE FORM IS BOUND INTO **SECTION 1** (See end of Returnable Documents) OF THIS DOCUMENT AS PART OF THE RETURNABLE DOCUMENTS. ONCE A CONTRACT IS CONCLUDED WITH A SUCCESSFUL TENDERER, THIS PAGE WILL BE REPLACED WITH THE FILLED AND SIGNED OFFER AND SIGN ACCEPTANCE BY THE EMPLOYER AND IT WILL BECOME PART OF THE CONTRACT.

PLEASE SUBMIT THE OFFER AND ACCEPTANCE FORM WITH THE OTHER RETURNABLE DOCUMENTS.

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

C1.2 - CONTRACT DATA

C 1.2 CONTRACT DATA:
with GCC for Construction Works - Second Edition 2010

CONTRACT DATA FOR:

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

Tender no: **ZNTM01130W**

The General Conditions of Contract are the clauses contained in the General Conditions of Contract (2010) (Second Edition) published by the South African Institution of Civil Engineering. Copies of these conditions of contract may be obtained through most regional offices of the South African Institution of Civil Engineering, telephone number 011 805 5947 or by visiting their website at www.saice.org.za.

CONTRACT SPECIFIC DATA
The following contract specific data are applicable to this contract:

CONTRACT VARIABLES

This schedule contains all variables specific to this document and is divided into pre-tender and post-tender categories. The pre-tender category must be completed in full and included in the tender documents. Both the pre-tender and post-tender categories form part of this **agreement.**

Spaces requiring information must be filled in, shown as 'not applicable' or deleted but not left blank. Where choices are offered, the non-applicable items are to be deleted. Where insufficient space is provided the information should be annexed hereto and cross referenced to the applicable clause of the schedule. Key cross reference clauses are italicised in *[ ]* brackets.
The Engineer/Principal Agent, in accordance with Clause 1.1.1.16, shall obtain the specific approval from the Employer before executing any of his functions according to the "Conditions under which Consultants are appointed", or in the event where an employee of the Employer represents the Employer, the relevant General Delegations applicable at the time of executing his/her duties as described in Clause 3.1.2.

Part 1: CONTRACT DATA PROVIDED BY THE EMPLOYER:

PRE-TENDER INFORMATION

CONTRACTING AND OTHER PARTIES

[1.1.1.15] **Employer:**

Head: Public Works (KZN Department of Public Works: Province of KwaZulu-Natal)

Postal address:

Private Bag X 9041
PIETERMARITZBURG
3200

Tel: ***033 - 8971399*** Fax: ***033 - 8971300***

[1.2.1.2] Physical address:
191 Prince Alfred Street
PIETERMARITZBURG
3200

[1.1.1.16] **Employers Agent 1**
Ibuya Consulting Engineers

Agent's service:
Electrical Engineer

Postal address:
P.O. Box 1692
Westville
3629

Tel: ***031266 7332*** Fax: ***031266 7340***

Employers Agent 2
MAP Africa

Agent's service:
Civil Engineer

Postal address:
P.O. Box 65610
Reservoir Hills
4090

Tel: ***0313095831*** Fax: ***0313095831***

Employers Agent 3
[Agents Name]

Agent's service:
[Identify Agent's Service, eg. Engineer]

Postal address:
[P.O. Box number]
[Name of town]
[Code]

Tel: ***[Tel Number including Area Code]*** Fax: ***[Fax Number including Area Code]***

Employers Agent 4
[Agents Name]

Agent's service:
[Identify Agent's Service, eg. Engineer]

Postal address:
[P.O. Box number]
[Name of town]
[Code]

Tel: ***[Tel Number including Area Code]*** Fax: ***[Fax Number including Area Code]***

Tender no:	**ZNTM01130W**	
	Employers Agent 5 ***[Agents Name]*** ***Agent's*** service: ***[Identify Agent's Service, eg. Engineer]*** Postal address: ***[P.O. Box number]*** ***[Name of town]*** ***[Code]*** Tel: insert ***[Tel Number including Area Code]*** Fax: ***[Fax Number including Area Code]***	
	Employers Agent 6 ***[Agents Name]*** ***Agent's*** service: ***[Identify Agent's Service, eg. Engineer]*** Postal address: ***[P.O. Box number]*** ***[Name of town]*** ***[Code]*** Tel: insert ***[Tel Number including Area Code]*** Fax: ***[Fax Number including Area Code]***	
	Employers Agent 7 ***[Agents Name]*** ***Agent's*** service: ***[Identify Agent's Service, eg. Engineer]*** Postal address: ***[P.O. Box number]*** ***[Name of town]*** ***[Code]*** Tel: insert ***[Tel Number including Area Code]*** Fax: ***[Fax Number including Area Code]***	
	Employers Agent 8 ***[Agents Name]*** ***Agent's*** service: ***[Identify Agent's Service, eg. Engineer]*** Postal address: ***[P.O. Box number]*** ***[Name of town]*** ***[Code]*** Tel: insert ***[Tel Number including Area Code]*** Fax: ***[Fax Number including Area Code]***	
	PART 1: DATA PROVIDED BY THE EMPLOYER	
[1.1.1.13]	**Defects Liability Period** The defects liability period is: **A time measured from the date of the Certificate of Completion.** Defects Liability Period is 12 Months for the whole of the Works	
	Latent Defect Period	
[5.16.3]	The latent defect period is:	5 years after the Final Approval Certificate
	Documentation required before Commencement of the Works:	
[5.3.1]	The documentation required before commencement with the Works execution are;	
[4.3]	Health and Safety Plan	The Contractor shall deliver his Health and Safety Plan of the Works within 14 calendar days after notice from the Employer, prior to the Commencement Date.
[5.6]	Initial Programme	The Contractor shall deliver his programme of work within 10 calendar days after notice from the Employer, prior to the Commencement Date.
[6.2]	Guarantee	The Contractor shall deliver his chosen Guarantee (security) for this Works within 14 calendar days after notice from the Employer, prior to the Commencement Date.
[8.6]	Insurance	The Contractor shall deliver his insurance for the Works within 14 calendar days after notice from the Employer, prior to the Commencement Date.
	Cash flow by contractor	The Contractor shall deliver his Cash flow for the Works within 14 calendar days after notice from the Employer, prior to the Commencement Date.
	Priced Bill of Quantity	The Contractor shall deliver his Priced Bill of Quantity within 14 calendar days after notice from the Employer, prior to the Commencement Date.
	Programme	The Contractor is required to submit his Programme of Works in terms of Clause 5.6.1 and 5.3.1 and the Principal Agent is required to approve this within 7 days in terms of Clause 5.6.3
	Other requirements	
[5.3.2]	The time to submit the documentation required before commencement with Works execution is:	14 calendar days

	Non-Working days
[5.8.1]	Non-Working days **Sundays** Special non- working days **All Nationally Recognized Public Holidays and the year end break**
[5.8.1]	First Year end break - commences ***14-Dec-26*** ends on ***11-Jan-27*** Second Year end break - commences ***13-Dec-27*** ends on ***10-Jan-28*** Third Year end break - commences ***15-Dec-28*** ends on ***12-Jan-29*** Fourth Year end break - commences ***14-Dec-29*** ends on ***11-Jan-30***
	Engineer/Principal Agent to consult with Employer
[3.1.3]	The Engineer shall obtain the specific approval from the Employer before executing any of his functions according to the "Conditions under which Consultants are appointed", or in the event where an employee of the Employer represents the Employer, the relevant General Delegations applicable at the time of executing his/her duties.
	Security
[6.2.1]	The time to deliver the deed of guarantee is Prior to site hand over in terms of clause 5.3.1 and 5.3.2.
[6.2.1]	Please see CONTRACT DATA - below to select Guarantee Option
	Commencement Date
	Commencement date means the date of Site Hand over that should not occur prior to the tenderer receiving one fully signed copy of the Offer and Acceptance in terms of the Form of Offer and Acceptance.
	*The **Agreement comes into effect** on the date when;* *The tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any)* *The agreement ("this document") consists of;* *1. Agreement and Conditions of Contract.* *2. Form of Offer and Acceptance.* *3. Contract Data.* *4. Scope of Works.* *5. Site Information.* *6. Drawings & documents referred to in the 1 to 4 above.* *(See Form of Offer and Acceptance)*
[5.3.1]	The contractor shall commence executing the Works within 7 calendar days from the Commencement Date.
[5.4.1]	***Possession of the* site** will be given within 10 calendar days after the **contractor** has fulfilled the conditions (4.3, 5.6, 6.2, 8.6) and received the notification from the Employer of Site Hand Over where the contractor will receive one fully signed copy of the Form of Offer and Acceptance from the **employer.**
[5.6.1]	The Contractor shall deliver his programme of work within 10 calendar days after notice from the Employer, prior to the Commencement Date.
	CONTRACT DETAILS
[1.1.1.33]	***Works*** description: Refer to document C3 – Scope of Work.
[1.1.1.30]	***Site*** description: Refer to document C4 – Site Information.
	Specific options that are applicable to a **State** organ only Where so :
[6.10.6.2]	***1)*** Interest rate legislation: ***(a)*** in respect of interest owed by the **employer**, the interest rate as determined by the Minister of Justice and Constitutional Development from time to time, in terms of section 1(2) of the Prescribed Rate of Interest Act, 1975 (Act No. 55 of 1975), will apply; and ***(b)*** in respect of interest owed to the **employer**, the interest rate as determined by the Minister of Finance, from time to time, in terms of section 80(1)(b) of the Public Finance Management Act, 1999 (Act No. 1 of 1999), will apply
	2) Lateral support insurance to be effected by the contractor: ***Yes X*** / ***No***
	3) Payment will be made for materials and goods ***Yes X*** / ***No***
	4) Dispute resolution by litigation ***Yes*** / ***No X***
	5) Extended **defects** liability period applicable to the following elements: ***Electrical, Mechanical and Civil work***
[8.6.1.1.2]	The Value of material, supplied by the Employer, and not included in the Contract Price, is: ***R0,00***
[8.6.1.1.3]	The amount to cover Professional Fees, not included in the Contract Price, for repairing damage and loss to be included in the insurance: ***30% of the Contract Price***
[8.6.1.3]	The limit for indemnity for liable insurance is: ***Unlimited***
[6.5.1.2.3]	The percentage allowance to cover overhead charges for contractor and subcontractors, is: ***33,30%***
[1.1.1.14]	**Practical Completion Date** The Practical Completion date is: **A time measured from the Commencement date.**
	For the **works** as a whole: The whole of the works shall be completed within: ***9*** *Months (which shall be deemed to include all Non – Working Days, Special Non – Working Days and the year-end Builders Annual Industry Holiday Periods).*
[5.5.1]	The date for **practical completion** shall be ***To be confirmed***
[5.13.1]	The penalty per calendar day shall be : ***0.04% of the Contract Price, rounded to the nearest R10***

	***For the* works** in **sections:**
	***The date for* practical completion** from the **commencement date** and the **penalty** per **calendar day:**
	Portion 1:
[5.5.1]	***N/A***
[5.13.1]	***0.04% of the Contract Price, rounded to the nearest R10***
	Portion 2:
[5.5.1]	***N/A***
[5.13.1]	***0.04% of the Contract Price, rounded to the nearest R10***
	Portion 3:
[5.5.1]	***N/A***
[5.13.1]	***0.04% of the Contract Price, rounded to the nearest R10***
	Portion 4:
[5.5.1]	***N/A***
[5.13.1]	***0.04% of the Contract Price, rounded to the nearest R10***
	Portion 5:
[5.5.1]	***N/A***
[5.13.1]	***0.04% of the Contract Price, rounded to the nearest R10***
	Portion 6:
[5.5.1]	***N/A***
[5.13.1]	***0.04% of the Contract Price, rounded to the nearest R10***
[1.3.2]	***The* law** applicable to this **agreement** shall be that of the: **Republic of South Africa**
[6.10.1.5]	The percentage advance on materials not yet built into the Permanent Works is: ***80,00%***
[6.10.3]	Percentage retention on amounts due to contractor is: ***The Percentage retention is nil. The only security required by the Employer will be such as selected by the Contractor on the Form of Offer and Acceptance and Part 2: CONTRACT DATA PROVIDED BY THE CONTRACTOR, point 2 - Documents, of the Contract Data.***
	Maximum retention is: ***10,00%*** *of the Contract Price*
[6.8.1]	Notwithstanding anything to the contrary contained in the General conditions of Contract and Preliminaries, this contract could only, when the construction period exceeds 6 months **and** the contract exceeds R1,000,000.00, be subject to a Contract Price Adjustment Factor.
[6.8.2] *[6.8.3]*	Clause 6.8.2 the last part of the sentence saying *"calculated according to the formula and the conditions set out in the Contract Price Adjustment Schedule."* must be replaced by *"calculated according to the Contract Price Adjustment Provisions (CPAP) Indices Application Manual for use with P0151 indices (Revised 1 January 2013)" as published by Statistics South Africa. The Contract Price Adjustment Provision (CPAP) will be subject to the most recently released indices by Statistic South Africa. Tenderers are advised that with reference to Clause 3.4.6 of the Contract Price Adjustment Provisions (CPAP) Indices Applications Manual, the Head: Public Works will not accept the submission by Tenderers of lists of additional items."*
[6.8.2] *[6.8.3]*	Where this contract is a Lump Sum contract, the contract will only be subject to Contract Price Adjustment Provisions (CPAP)(Revised 1 January 2013) where the contract period equals or exceeds 6 calendar months. The applicable work group shall be WG 180 for domestic buildings or WG 181 for commercial and industrial buildings only.
[5.14.5]	***The following clause must be added to clause 5.14.5:***
	[5.14.5.6] The employers agent shall submit the **final account** within 3 calendar months to the principal agent.
[10.5]	The determinations of disputes shall be by ARBITRATION ONLY.
[10.5.3]	The number of Adjudication Board Members to be appointed is: **One**
	Replace the last part of the clause with the following: *"..on the application of either party, by the Chairman, or his nominee of the Association of Arbitrators."*
[10.9.1]	
	***Where* CPAP** is applicable, the **contract sum** will be adjusted in accordance with the Contract Price Adjustment Provisions (**CPAP**) as set out in the **CPAP** Indices Application Manual as published by Statistics South Africa, dated 1 January 2013 and any amendments thereto: 1) Glass etc. measured in specialist section Metalwork, will be adjusted in terms of the index for that work group unless specifically stated otherwise in the bills of quantities. 2) In case of uninterruptible power supplies, elevators, escalators and hoists, generating sets, motor-alternator sets and intercommunication systems shall be adjusted in accordance with Work Group 170. 3) Further to clause 3.4.6 of the CPAP Indices Application Manual, the listing of additional items for exclusion by Tenderer's, will not be permitted. ***Alternative Indices:* Not Applicable**
	Details of changes made to the General Conditions of Contract for construction works (2010) Second Edition
	Clause
[1.1]	*[1.1.1.5]* **COMMENCEMENT DATE** – means the actual date of Site Hand over that should not occur prior to the Tenderer receiving one fully signed copy of the Offer and Acceptance in terms of the Form of Offer and Acceptance.
	[5.12.2.2] **ABNORMAL CLIMATIC CONDITIONS** - means conditions over and above what could reasonably be expected for the specific locality where the Works are being executed and include inter alia exessive rain, heat, cold, wind and any other climatic condition that would not normally be experienced during the season that the Works are executed in that area. The South African Weather Service's (http://www.weathersa.co.za) 10 year average climatic conditions statistics would be what could be reasonably expected for the specific locality where the Works are executed.
	[6.2.1] **CONSTRUCTION GUARANTEE** – means an on demand guarantee at call obtained by the **contractor** from an institution approved by the **employer** in terms of the **employer's** construction guarantee form as selected in the Offer and Acceptance Form and the **contract data.**
	CONSTRUCTION PERIOD – means the period commencing on the **commencement date** and ending on the date of **due completion date.** This period will be deemed to commence on actual site hand over date to the contractor and end on the date of practical completion and shall include all annual industrial holiday periods, Sundays and public holidays.
	CORRUPT PRACTICE – means the offer, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.
	FINAL ACCOUNT - The document prepared by the principal agent, which reflects the contract value of the works at final approval or termination.
	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 tenderer and includes collusive practise among tenderers (prior to or after the tender submission) designed to establish tender prices at artificial non-competitive levels and to deprive the tenderer of the benefits of free and open competition.
	INTEREST – the interest rates applicable on this contract, whether specifically indicated in the relevant clauses or not, will be in terms of the legislation of the Republic of South Africa, and in particular:
	(a) in respect of interest owed by the **employer,** the interest rate as determined by the Minister of Justice and Constitutional Development from time to time, in terms of section 1(2) of the Prescribed Rate of Interest Act, 1975 (Act No. 55 of 1975), will apply; and
	(b) in respect of interest owed to the employer, the interest rate as determined by the Minister of Finance, from time to time, in terms of section 80(1)(b) of the Public Finance Management Act, 1999 (Act No. 1 of 1999), will apply

	[1.1.1.16]	**ENGINEER/PRINCIPAL AGENT –** means the person or entity appointed by the **Employer** and named in the **Contract Data** as the **Engineer /Principal Agent** to act as agent of the **Employer**. In the event of an Engineer/**Principal Agent** not being appointed, then all the duties and obligations of an Engineer/**Principal Agent** as detailed in the **Contract** shall be fulfilled by a representative of the **Employer** as named in the **Contract Data. (Hereafter referred to as Engineer)**
	[1.1.1.21]	**GENERAL ITEMS -** or preliminaries means items stipulated in the Pricing Data relating to general obligations, site services, facilities and/or items that cover elements of the cost of the work which are not considered as proportional to the quantities of the Permanent Works.
	[4.4.1]	Add the following to the clause 4.4.1: *"The Contract shall only use subcontractors who are duly registered with the CIDB and who has an ACTIVE status at the time of submitting the tender"*
	[6.2.1]	Refer to Offer and Acceptance form for the various options that the contractor may choose from in providing a form of **Guarantee** under "GUARATEE OPTIONS".
	[6.10.6.2]	Replace *"at the prime overdraft rate, as charged by the Contractor's Bank,"* with *"..at the interest rate as determined by the Minister of Justice and Constitutional Development from time to time, in terms of section 1(2) of the Prescribed Rate of Interest Act, 1975 (Act No. 55 of 1975).* " Omit *",on all overdue payments from the date on which the same should have been paid..."* and replace with " only after 30 calendar days from receiving written notice from the Contractor that the amount is overdue,.."
	SPECIAL CONDITIONS OF CONTRACT	
[5.12.3]		Omit clause 5.12.3 and add the following: *"5.12.3. If an extension of time is granted, the Contractor shall be paid such additional time-related General Items, including for special non-working days, if applicable as are appropriate regarding to any other compensation which may already have been granted in respect of the circumstances concerned.The reasons for extension of time that would invoke payment of time related General Items are inter alia;* *5.12.3.1 Failure to give possession of the site to the contractor.* *5.12.3.2 Making good physical loss and repairing damage to the works where the contractor is not at risk.* *5.12.3.3 Contract instructions not occasioned by default by the contractor.* *5.12.3.4 Failure to issue construction information timeously or the late issue of a contract instruction following a request from the contractor.* *5.12.3.5 Late acceptance by the principal agent of a design undertaken by a selected subcontractor where the contractor's obligations have been met.* *5.12.3.6 Suspension or cancellation termination invoked by a nominated or selected n/s subcontractor due to default by the employer or the principal agent.* *5.12.3.7 Insolvency of a nominated subcontractor.* *5.12.3.8 A direct contractor.* *5.12.3.9 Opening up and testing of work and materials and goods where such work is according to in accordance with the contract documents.* *5.12.3.10 The execution of additional work for which the quantity included in the bills of quantities is not sufficiently accurate.* *5.12.3.11 Late or failure to supply materials and goods for which the employer is responsible.* *5.12.3.12 Suspension of the works."*
[5.14.5.1]		Omit entire clause 5.14.5.1
[5.16.4]		Add the following new clause *"5.16.4. Upon the issue of a Final Approval Certificate, unless otherwise provided in the Contract:* *5.16.4.1. The performance Guarantee (if any) shall be returned within 14 days to the guarantor in terms of Clause 7."*
[6.2.2]		Replace the following *"..it shall be deemed that the Contractor has selected a security of ten percent retention of the value of the Works."* with *"..it shall be deemed that the Contractor has selected a security of a bank or insurance guarantee of 5% of the value of the Works and a payment reduction of 5% of the value certified in the payment certificate excluding value added tax."*
[6.2.3]		Add to clause 6.2.3 the following "*The Contractor shall provide proof of paid-up premium payments to accompany his payment certificate as proof that his performance guarantee has not expired yet. The Contractor will not receive payment without proof of the validity of their performance*
[9.3.2.2]		Omit *"without prejudice to the exercise of any lien the Contractor may have acquired over the Employer's property."*
		Duties and functions of the **Engineer** requiring the specific approval of the **Employer** BEFORE execution of any part of these duties are as follows:
	(a)	Determinations of contractors claims for extension of time (revision of the contract completion date). All claims for extension of time shall be submitted by the **Engineer,** together with the **Engineer's** recommendations, to the **Employer** for determination. Omit "Engineer" in clause 42.2 and replace with
	(b)	Drawings, instructions or communications of any kind requiring variations of the works and involving EXTRA's shall NOT be given effect by the **Contractor** UNTIL BOTH the "Official Variation Order" and the "Financial Request for Variation Order and Additional Funds" form, as issued by the Department of Public Works, have been approved and signed by the **Employer**.
	(c)	Insurance policies to be approved by the **Employer** within 21 days of the date of the **Commencement** of the Works.
	(d)	Any notice of disagreement raised by the **Contractor** or written Dispute Notice given by the **Contractor** to the **Engineer** shall be submitted by the **Engineer**, together with the **Engineer's** recommendations, to the **Employer** for determination.
	(e)	The issue of the certificate of practical completion, certificate of completion and the final approval certificate shall be signed and submitted by the **Engineer**, to the **Employer** for final approval and signature. The certificates shall not be considered as officially issued until signed by the **Employer**.
	MANAGING PROJECT DURATION	
	(a)	The Contractor shall co-ordinate his programme with all other contractors whose work may precede or be executed simultaneously to his own. The Contractor will be called upon to plan and control the project using the Project Evaluation and Review Technique (PERT) or other approved Critical Path Method (CPM) network analysis of his events and activities and those of the dub-contractors in his employ and must co-ordinate his planning with any other contractor employed on the project. A fortnightly project control report will be expected from the Contractor in writing, evaluating any gains or delays against the critical path and he should allow for all costs involved in planning reviewing and updating the programme to the satisfaction of the Principal Agent against this item.
	(b)	Activity-and total float shall belong to the Employer.
	(c)	The Contractor shall deliver his programme of work within 10 calendar days after notice from the Employer, prior to the Commencement Date. It is a condition of this contact that, the contracter submit to the Engineer/principal agent a detailed CPM Programme which shall be to the approval of the Engineer/principal agent. In this regard tenderers are advised to consult with the Engineer/Principal Agent as to the format and requirements of the programme as no claim whatsoever will entertained should the programme fail to meet the requirements of the Engineer/Principal Agent. Failure to submit the programme within the stipulated time may result in the contractor being held in breach of contract. The approved programme will form the basis of time management of the project and extension of time will not be guaranteed unless the Contractor has strictly complied with this provision. The programme shall make allowance for rain and the number of rain days allowed within the critical path shall be on the provisions of the clause dealing with inclement weather and claiming for delays in performance in this bill. Allowance for the above must be made under this item as no claims for failing to comply with this precondition will later be entertained.
	INCLEMENT WEATHER AND CLAIMS FOR DELAYS IN PERFORMANCE	
	(a)	The Contract Sum includes a monthly allowance of 3 working days inclement weather during which rainfall exceeds 10mm per day for months as indicated in the Scope of Works. These days shall be reflected on the critical path of the Contractor's programme as specified in MANAGING PROJECT DURATION above.
	(b)	Claims for delays in performance due to inclement weather shall be calculated separately for each calendar month and for the project as a whole. Delays or gains to the critical path shall be reflected in all revisions of the programme. An extension of time will only be granted where the following conditions are met: (i) The criteria to be used for WORK stoppages shall be for safety hazards or poor quality of work. (ii) The Employer's site representative or the Employer's Principal Agent, if the site representative is not available shall be notified when the Contractor stops the work and intends to claim performance delays. The Employer representative shall inspect the situation together with the Contractor and give an immediate decision.

1. The stoppage claimed must cause a delay in the Completion Date of work. If the critical activities can proceed and a non-critical activity is delayed due to inclement weather no claims for delay shall be granted.
2. No claims for stoppages less than 2(two) hours per day shall be considered.
3. Claims granted for more than 2 (two) hours, but less than 10 (ten) hour (lunch included) day, shall be added together and expressed as full days.
4. All claims shall be submitted in writing to the Principal Agent within one working day of the actual stoppage.
5. The total delay in performance granted to the Contractor expressed in days shall be added to the contractual Completion Date of each section of the Works. The contractual penalty clause shall only come into effect after this newly arrived date.
6. Total delays (in hours) will be rounded up or down to the nearest integer for the calculation of Working Days. The total hours (including lunch) per Working Day shall be 10 unless otherwise indicated on the Contractor's programme.
7. Where the programmed delays for inclement weather exceed the actual delays incurred the Completion Date(s) will not be adjusted.
8. Where the project includes builder's holidays the programmed durations for inclement weather shall be adjusted pro-rate to the actual Working Days.
9. The total of all monthly delays due to inclement weather shall be calculated in accordance with the example given below:

Description		Months					Total
		Sept	Oct	Nov	Dec	Jan	
		Hours	Hours	Hours	Hours	Hours	Hours
Programmed	Rain days	0	30	30	15	15	90
Actual	Rain days	16	22	35	15	18	106
Difference		-16	8	-5	0	-3	-16
8 hrs/day*						Estimated Extension of time - in working days	2

See point 5.2 in the Scope of Works for the specific days the tenderer must allow for in this contract.

Tender no: **ZNTM01130W** **Part 2: CONTRACT DATA PROVIDED BY THE CONTRACTOR:**

POST-TENDER INFORMATION

Note: All information for this section requires consultation with the **Contractor**. The **Engineer/Principal Agent** shall not pre-select any of the alternatives available to the **Contractor.**

1 CONTRACT DETAILS

[1.1.1.9] **Contractor Name:** .....

[1.2.1.2] Postal address:

.....

.....

.....

Tel no ..... Fax no .....

Tax / VAT Registration No: ..... e-mail .....

Physical address:

.....

.....

.....

[1.1.1.10] The accepted **contract price** inclusive of **tax** is R :

.....

[Amount in words]

Payment Of Preliminaries (Clause 6.7, 6.8, 6.10 and 6.11)

The preliminaries amounts shall be paid in terms of:

***Alternative A**	**Yes**
****Alternative B**	**N/A**

** Assessed by the Engineer/Principal Agent as an amount prorated to the value of the Work duly executed in the same ratio as the Preliminaries bears to the Contract Price excluding VAT, Preliminary amount, Contingencies and any CPAP.*

*** Calculated from the priced Bill of Quantity/Lump Sum document. The Contractor and the Engineer/Principal Agent shall agree on a division of the priced Preliminaries items into: initial establishment charge, monthly charge and final disestablishment charge.*

If the Contractor and the Engineer/Principal Agent can not agree, within 10 Working Days from the Commencement Date, on such a division then the Engineer/Principal Agent shall make a division of the Preliminaries to be incorporated in the valuations for each monthly payment certificate as follows;

10% of the General Items/Preliminaries amount shall not be varied

15% of the General Items/Preliminaries shall only be varied in proportion of the Contract Price to the Contract Sum

75% of the General Items/Preliminaries shall be varied in proportion to the revised Construction Period compared with the initial Construction Period.

Alternative A

Adjustment of Preliminaries (Clause 6.7, 6.8, 6.10 and 6.11)

For the adjustment of Preliminaries both the Contract Sum and the Contract Value (including tax) shall exclude the amount of Preliminaries, all Contingency Sum(s) and any provision for Cost Price Adjustment Provisions:-

- An amount which shall not be varied.

- An amount varied in proportion to the contract value as compared to the Contract Sum.

- An amount varied in proportion to the Construction Period as compared to the initial Construction Period (excluding revisions to the Construction Period to which the Contractor is not entitled) to adjustment of the Contract Value in terms of the agreement.

The Contractor shall provide a breakdown of charges (including tax) within 15 working days of the date of acceptance of tender and, where applicable, an apportionment of Preliminaries per section

If the Contractor and the Principal Agent cannot agree, within ten (10) Working Days from the Commencement Date, on such a division then the Principal Agent shall make a division of the Preliminaries to be incorporated in the valuations for each monthly payment certificate as follows;

10% of the amount shall not be varied

15% varied in proportion of the Contract Value to the Contract Sum

75% varied in proportion to the revised Construction period compared with the initial Construction Period

Sectional Completion : Subdivision of Preliminaries Costs

For the adjustment of preliminaries for sections of the work the value of fixed, value, and time related amounts of the preliminaries for each section is required. The contractor is to provide such information within fifteen (15) working days of taking possession of the site, failing which the categorised preliminaries amounts shall be prorated to the value of each section.

The above shall apply equally for projects where sectional completion was not contemplated at tender stage but subsequently occurred on an adhoc basis during construction of the works as agreed between the client and the employer. The original priced categorised amounts for fixed, value, and time related amounts shall be prorated to the value of each section.

When an extension of time has been granted in terms of the GCC and the preliminaries require to be adjusted accordingly, the pertinent sectional (subdivided) categorised preliminaries amounts shall be utilised, where applicable and not the overall preliminary amounts.

Where sectional completion is required in terms of the agreement, the Contractor shall provide the Principal Agent with the division of the above categorized amounts into sections. Should the Contractor fail to provide such information within the period stipulated the categorized amounts shall be prorated to the value of each section.

YES *yes / no*

or

Alternative B The Contractor shall within 15 working days of the date of possession of the site provide the Principal Agent with a detailed breakdown of Preliminaries amounts for the works as a whole, or per section where applicable, including administrative and supervisory staff charges and for the use of construction equipment in terms of the programme. NO *yes / no*

The contractor is informed that only option 'A' shall apply

2 DOCUMENTS

Contract documents marked and annexed hereto:

Priced **Bills of Quantities:**	**Yes**	Yes	**No**	
Lump Sum document: :	**Yes**		**No**	No

Guarantee Options:

Not applicable

2.2 DESIGN BRIEF

Not applicable	**No**	**YES or NO**
2.3 DRAWINGS	**Yes**	**YES or NO**
See list of drawings/Annexure's attached to this document.	**Yes**	**YES or NO**
2.4 DESIGN PROCEDURES	**Yes**	**YES or NO**
Not applicable		

Contract drawings:	**Yes**	Yes	**No**	
Other documents**:**				

Waiver of the Contractors lien or right of continuing possession is required. **YES**

GUARANTEE OPTIONS

The Tenderer agrees to provide a bank or insurance guarantee in accordance with clause 6.2.3 of the Conditions of the GCC2010 Contract within the period stated in the Contract Data. This guarantee shall be for a sum equal to an amount stated in the Contract Data.

Guarantees submitted must be issued by either an insurance company duly registered in terms of the Insurance Act (Long Term Insurance Act No 52 of 1998 or Short Term Insurance Act No 53 of 1998) or by a bank duly registered in terms of the Banks Act No 94 of 1990, on the pro-forma referred to above. No alterations or amendments of the wording of the pro-forma will be accepted.

(a) the tenderer accepts that in respect of contracts up to R1 million, a payment reduction of 5% of the contact value will be applicable and will be reduced by the Employer in terms of the applicable conditions of contract. □

(b) in respect of contracts above R1 million, the Tenderer offers to provide security as indicated below: select one option

(i) cash deposit of 10 % of the Contract Price	
(ii) bank or insurance Performance Guarantee of 10 % of the Contract Price	
(iii) cash deposit of 5% of the Contract Price and a payment reduction of 5% of the value certified in the payment certificate (excluding VAT)	
(iv) bank or insurance guarantee of 5% of the Contract Price and a payment reduction of 5% of the value certified in the payment certificate (excluding VAT)	

NOTE: Where the Tenderer has not selected one of the guarantee options above, the default option will be as if the Tenderer has selected a security of a bank or insurance guarantee of 5% of the value of the Works and a payment reduction of 5% of the value certified in the payment certificate excluding value added tax. - See GCC2010 clause 6.2.2 as amended in Contract Data.

3	**SIGNATURES OF THE CONTRACTING PARTIES**	
	Thus done and signed at……on ……..of……20…..	
	Name of signatory	for and behalf of the **Employer** who by signature hereof
	Capacity of signatory	as Witness.
	Thus done and signed at……on ……..of……20…..	
	Name of signatory	for and behalf of the **Contractor** who by signature hereof
	Capacity of signatory	as Witness.

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

C1.3 - FORM OF GUARANTEE

C1.3 PERFORMANCE GUARANTEE - GCC FOR CONSTRUCTION WORKS (2nd Edition - 2010)

Head: Public Works
KZN Department of Public Works:
Private Bag X 9041
PIETERMARITZBURG
3200

Sir,

ON DEMAND PERFORMANCE GUARANTEE

Tender Number ZNTM01130W	**Project Code 073636**

For use with the General Conditions of Contract for Construction Works, Second Edition, 2010.

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means: _____

Physical Address: _____

"Employer" means: The Provincial Administration of KwaZulu-Natal in its Department of Public Works

"Contractor" means: _____

"Engineer" means: _____

"Works" means: **KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**

"Site" means: _____

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

"Contract Sum" means: The accepted amount inclusive of tax of: _____

Amount in Words:

"Guaranteed Sum" means: The maximum aggregate amount of: 10% _____
Of Contract Sum

Amount in Words: _____

"Expiry Date" means: _____

CONTRACT DETAILS

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

PERFORMANCE GUARANTEE

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

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

3 The Guarantor hereby acknowledges that:

3,1 any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;

3,2 its obligation under the Performance Guarantee is restricted to the payment of money.

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

4,1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Engineer in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;

4,2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum certified has still not been paid;

4,3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum Certified in 4.

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

5,1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 5; or

5,2 a provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 5; and

5,3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.

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

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

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

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

10 The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.

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

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

13 This Performance Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.

14 Where this Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Court Act No 32 of 1944, as amended, to this jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at _____

Date _____

Guarantor's signatory (1) _____

Capacity _____

Guarantor's signatory (2) _____

Capacity _____

Witness signatory (1) _____

Witness signatory (2) _____

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

PART C2 - PRICING DATA

C2.1 PRICING INSTRUCTIONS GCC FOR CONSTRUCTION WORKS (Second Edition 2010)			
Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

C2.1 Pricing Instructions

	Where any item is not relevant to this specific contract, such item is marked N/A (signifying "not applicable") The adjustment of the preliminaries each item priced is to be allocated to one or more of the three categories by insertion of "F", "V", "T" as the case may be against the price in the "rate" column immediately preceding the "amount" column, where "F" denotes a fixed amount (amount not varied), "V" denotes an amount variable in proportion to value and "T" denotes an amount variable in proportion to time.
1	**MASSES AND MEASURING UNITS** These shall be in accordance with the Measuring Units and National Measuring Standards Act No. 76 of 1973 and amendments thereto. The pages of each of these documents are numbered consecutively and before the Tenderer submits his tender he should check the number of pages, and if any are found missing or duplicated, or the figures or writing indistinct, or the documents contain any obvious error, he should apply to the Head : Public Works AT ONCE and have same rectified as no liability whatsoever will be admitted by the Administration in respect of errors in Tender due to the foregoing.
2	**PRICES FOR VARIATIONS** Where prices or quotations for variations are submitted by the Contractor during the currency of the Contract, it is to be clearly understood that these are for the purpose of consideration by the Head : Public Works and that there is no assumption of acceptance. The Contractor will be notified of acceptance of prices or quotations either by insertion of the amount on the variation order or by written intimation.
3	**SCALE** The scale to which the Drawings are made is only to be made use of when no figured dimensions are given either on the Drawings or in the tender documents and the figured dimensions are always to be followed though they may not coincide with the scale of the Drawings, but dimensions where possible are to be taken from the buildings.
4	**PROVISIONAL ITEMS** All items described as "Provisional" shall be used as directed by the Employer and measured and valued or paid for. No work for which "Provisional" items are allowed shall be commenced without written instructions from the Head : Public Works.

5 TIMELY ORDERING OF MATERIALS

The Contractor is warned to place all orders for materials or special articles as early as possible, as he will be held solely responsible for any delay in the delivery of such goods.
Nevertheless this tender is conditional upon no liability being attached to the Contractor if delivery of materials is rendered impossible by reason of any act of the Government.

6 ELECTRICAL LIGHTING, POWER AND WATER

The Contractor shall provide any artificial lighting which may be necessary or required for the proper execution of the works, and provide electric power and water required by all Sub-Contractors, Nominated Sub-Contractors and Sub-Contractors appointed directly by the Employer.

The Contractor shall give all notices and pay all fees in connection with temporary electrical and water connections and shall connect temporary Electrical and Water meters for and pay for all current and water consumed.

Tenderers are advised that the permanent light fittings and water points of any kind installed in the Works are not to be used to provide temporary lighting and supplement water requirements for construction purposes.

7 IMPORT PERMITS, DUTIES AND SURCHARGES.

All tenders by means of which imported products are being called for, must use the rate of exchange 14 days prior to the closing date indicated in the tender documents. If this day falls on a weekend or public holiday, the next working day must be used.

Furthermore, Tenderers must submit documentary proof (in the form of a certified copy) from their bank or legally recognised financial institution, clearly indicating what the rate of exchange was 14 days prior to the closing date, as mentioned above.

Together with this, the Tenderer must confirm that the tender price relating to an imported product, was based on the rate of exchange 14 days prior to the closing date as mentioned above.

8 STANDARD SYSTEM OF MEASUREMENT WHERE BILLS OF QUANTITIES FORM PART OF THE TENDER DOCUMENTS

The work executed under this Contract has been measured in accordance with the;

Standard System of Measuring Builders Work (7th Edition)

including all amendments unless descriptions of items indicate a deviation and it shall be understood that the system of measurement which is herein adopted is the only system of measurement which will be recognised in connection with this contract. Any contradictions to this system of measurement contained in the “Model Preambles for Trades 2008” shall be disregarded (unless same have been accommodated in the system of measurement) but applicable rates shall be included for all requirements stated and not measured separately in compliance with this system.

9 PRICING OF ROCK EXCAVATIONS

It is a condition of this tender that should the tenderer elect to price the Rock Excavation included in this tender, the rates must be market related and should be identically priced for the same classification of excavations and not vary for similar billed items in the different sections.

10 BROAD BASED BLACK ECONOMIC EMPOWERMENT

1. It is the deliberate policy of the Provincial Administration of KwaZulu-Natal to foster and to encourage the economic empowerment of Black South Africans. This policy will be implemented without prescription and without prejudicing the principles and the integrity of the Provincial Administration of KwaZulu-Natal. Subject to these constraints and also subject to good business practise and commercial consideration, it is therefore considered appropriate that the Provincial Administration of KwaZulu-Natal should encourage business relationships with companies which actively pursue Affirmative Action and Black Economic Empowerment Programmes.
2. In responding to this tender you are therefore encouraged to devote attention to these two subjects of Affirmative Action and Economic Empowerment. In addition, in considering the appointment of sub-contractors, you are requested to extend the spirit of these policies.
3. The foregoing enunciations of this policy are not intended to be prescriptive nor to preclude any individual or operation from responding to this tender.

11 REGISTRATION ON THE CENTRAL SUPPLIERS DATABASE

1. In terms of the Public Finance Management Act (PFMA), 1999 (Act No 1 of 1999) Section 38 (1) (a) (iii) and 51 (1) (iii) and Section 76 (4) of PFMA National Treasury developed a single platform, The Central Supplier Database (CSD) for the registration of prospective suppliers including the varification functionality of key supplier information.
2. Prospective suppliers will be able to self - register on the CSD website: www.csd.gov.za
3. Once the supplier information has been varified with external data sources by National Treasury a unique supplier number and security code will be allocated and communicated to the supplier. Suppliers will be required to keep their data updated regularly and should confirm at least once a year that their data is still current and updated.
4. Suppliers can provide their CSD supplier number and unique security code to organs of state to view their varified CSD information.
5. Tenderers are required to fill in clearly, legibly, in bold print and black ink their CSD supplier number in the space hereunder:

Name of Supplier	
Central Supplier Database (CSD) Supplier Number:	

12 TAX CLEARANCE REQUIREMENTS

It is a condition of tender that the taxes of the successful tenderer must be in order, or that satisfactory arrangements have been made with South African Revenue Service (SARS) to meet the Tenderder's tax obligations. It is a condition of this Offer of Commission that your practice remains in good standing with SARS (South African Revenue Services) in terms of its tax clearance, during the project, which is required to process your payment certificates.

1. In order to meet this requirement tenderers are required to apply via e-filing at any SARS branch office nationally. The Tax Complance Status (TCS) requirements are also applicable to foreign Tenderders / individuals who wish to submit Tenders.
2. SARS will then furnish the Tenderder with a Tax Compliance Status (TCS) PIN that will be valid for a period of 1 (one) year from the date of approval.
3. In tenders where Consortia / Joint Ventures / Sub-contractors are involved, each party must submit a separate Tax Compliance Status (TCS) PIN.
4. Application for Tax Compliance Status (TCS) PIN can be done via e-filing at any SARS branch office nationally or on the website www.sars.gov.za.
5. Tax Clearance Certificates may be printed via eFiling. In order to use this provision, taxpayers will need to register with SARS as eFilers through the website www.sars.gov.za.

	6 Tax Clearance Certificates may be printed via eFiling. In order to use this provision, taxpayers will need to register with SARS as eFilers through the website www.sars.gov.za.	
	Security PIN Number	
	Company / Entity Tax Reference Number	

13 BILLS OF QUANTITIES/LUMP SUM DOCUMENT

The Bills of Quantities document forms part of and must be read and priced in conjunction with all the other documents forming part of the contract documents, the Standard Conditions of Tender, Conditions of Contract, Standard Preambles to all Trades, Specifications, Drawings and all other relevant documentation.

14 VALUE ADDED TAX

The tender price must include for Value Added Tax (VAT). All rates, provisional sums, etc. in the Bills of Quantities must however be net (exclusive of VAT) with VAT calculated and added to the Total Value thereof in the Final Summary.

15 FIXED PRICE CONTRACT

Should the Bills of Quantities/Lump Sum Document be a fixed price contract, the following clause must be inserted in the Pricing Instructions:

Tenderers are to take note that the contract price adjustments are not applicable to this contract. Tenderers should therefore make provision in the Contract Sum, schedule of rates, etc. for possible price increases during the contract period, as no claims in this regard shall be entertained.

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

C2.2 - Preliminaries for GCC for Construction works - 2nd Edition 2010

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

BILL NO. 1
C2 .2 PRELIMINARY AND GENERAL

	NOTES	UNIT	QUANTITY	RATE	AMOUNT
i)	The agreement is to be the General Conditions of Contract for Works of Civil Engineering Construction (2010) (Second Edition) , published by the S. A. Institution Of Civil Engineering.				
ii)	The Preliminaries are to be the Construction and management requirements for works contracts - Part 1: General engineering and construction works (SANS 1921-1: 2004 Edition 1) prepared by Standards South Africa and shall be deemed to be incorporated herein.				
iii)	Tenderers are referred to the abovementioned documents for the full intent and meaning of each clause thereof (hereinafter referred to by heading and clause number only) for which such allowance must be made as may be considered necessary.				
iv)	Where standard clauses or alternatives are not entirely applicable to this contract such modifications, corrections or supplements as will apply are given under each relevant clause heading.				
v)	Where any item is not relevant to this specific contract such item is marked N/A (signifying "not applicable").				
vi)	Adjustment of the preliminaries: each item priced, is to be allocated to one or more of the three categories, where "F" denotes a fixed amount (amount not to be varied), "V" denotes an amount variable in proportion to value and "T" denotes an amount in proportion to time.				
vii)	Time (T) related Preliminaries will only be adjusted for omissions or additions, issued by the Employer, or delays caused by the Employer, for which variation and extension of time has been granted. ***See Contract Data*** .				
	SECTION A: GENERAL CONDITIONS OF CONTRACT				
A1	General (clause 1) F:..... V:..... T:.....	Item			
A2	Basis of Contract (clause 2) F:..... V:..... T:.....	Item			
A3	Engineer (clause 3) F:..... V:..... T:.....	Item			
A4	Contractor's General Obligation (clause 4) F:..... V:..... T:.....	Item			
A5	Time and Related Matters (clause 5) - As referred to in the Contract Data under Special Condition of Contract. The Contract Period shall be deemed to include all Non – Working Days, Special Non – Working Days and the year-end Builders Annual Industry Holiday Periods. F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
A6	Payment and Related Matters (clause 6)				
	F:..... V:..... T:.....	Item			
A7	Quality and Related Matters (clause 7)				
	F:..... V:..... T:.....	Item			
A8	Risk and Related Matters (clause 8)				
	F:..... V:..... T:.....	Item			
A9	Termination of Contract (clause 9)				
	F:..... V:..... T:.....	Item			
A10	Claims and Disputes (clause 10)				
	F:..... V:..... T:.....	Item			
	SECTION B: SANS 1921-1:2004 (Edition 1): CONSTRUCTION AND MANAGEMENT REQUIREMENTS FOR WORKS CONTRACTS: PART 1				
	Refer to the SCOPE OF WORK for detail requirements:				
B1	Scope				
	F:..... V:..... T:.....	Item			
B2	Normative references				
	F:..... V:..... T:.....	Item			
B3	Definitions				
	F:..... V:..... T:.....	Item			
B4	Requirements for construction and management				
	F:..... V:..... T:.....	Item			
B4.1	General				
	F:..... V:..... T:.....	Item			
B4.2	Responsibilities for design and construction				
	F:..... V:..... T:.....	Item			
B4.3	Planning, programme and method statements				
	F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
B4.4	Quality assurance F:..... V:..... T:.....	Item			
B4.5	Setting out F:..... V:..... T:.....	Item			
B4.6	Management and disposal of water F:..... V:..... T:.....	Item			
B4.7	Blasting F:..... V:..... T:.....	Item			
B4.8	Works adjacent to services and structures F:..... V:..... T:.....	Item			
B4.9	Management of the Works and site F:..... V:..... T:.....	Item			
B4.10	Earthworks F:..... V:..... T:.....	Item			
B4.11	Testing F:..... V:..... T:.....	Item			
B4.12	Materials, samples and fabrication drawings F:..... V:..... T:.....	Item			
B4.13	Equipment F:..... V:..... T:.....	Item			
B4.14	Site establishment F:..... V:..... T:.....	Item			
B4.15	Survey control F:..... V:..... T:.....	Item			
B4.16	Temporary works F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
B4.17	Existing services F:..... V:..... T:.....	Item			
B4.18	Health and safety F:..... V:..... T:.....	Item			
B4.19	Environmental requirements F:..... V:..... T:.....	Item			
B4.20	Alterations, additions, extensions and modifications to existing works F:..... V:..... T:.....	Item			
B4.21	Inspection of adjoining structures, services, buildings and property F:..... V:..... T:.....	Item			
B4.22	Attendance on nominated and selected subcontractors F:..... V:..... T:.....	Item			
	SECTION C: SCOPE OF WORK in accordance with SANS 10403 *(The reference to Clauses refer to Table B.1 of SANS 1921-1:2004)*				
C1	Certification by recognised bodies - CLAUSE 4.4 F:..... V:..... T:.....	Item			
C2	Agrément certificates - CLAUSE 4.5 F:..... V:..... T:.....	N/A			
C3	Other services and facilities - CLAUSE 4.8 F:..... V:..... T:.....	Item			
C4	Recording of weather - CLAUSE 5.2 F:..... V:..... T:.....	Item			
C5	Management meetings - CLAUSE 5.3 F:..... V:..... T:.....	Item			
C6	Daily records CLAUSE 5.6 F:..... V:..... T:.....	Item			
C7	Bond and guarantees - CLAUSE 5.7 F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
C8	Permits - CLAUSE 5.9 F:..... V:..... T:.....	Item			
C9	Proof of compliance with the law - CLAUSE 5.10 F:..... V:..... T:.....	Item			
	SECTION D: SPECIFICATION DATA ASSOCIATED WITH SANS 1921-1:2004 (Table A.1)				
D1	Requirements for drawings, information and calculations for which the contractor is responsible CLAUSE 4.1.7 F:..... V:..... T:.....	Item			
D2	The responsibility strategy assigned to the contractor for the works CLAUSE 4.2.1 F:..... V:..... T:.....	Item			
D3	The planning, programme and method statements - CLAUSE 4.3 F:..... V:..... T:.....	Item			
D4	Samples of materials, workmanship and finishes - CLAUSE 4.12.1 F:..... V:..... T:.....	Item			
D5	Fabrication drawings that the contractor is to provide and deliver to the employer - CLAUSE 4.12.2 F:..... V:..... T:.....	Item			
D6	Office for the foreman CLAUSE 4.14.3 F:..... V:..... T:.....	Item			
D7	Telephone - CLAUSE 4.14.3 F:..... V:..... T:.....	Item			
D8	Office for inspector of works - CLAUSE 4.14.3 F:..... V:..... T:.....	Item			
D9	Telephone in office for inspector of works - CLAUSE 4.14.3 F:..... V:..... T:.....	Item			
D10	Sheds - CLAUSE 4.14.3 F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
D11	Provision and erection of signboards - CLAUSE 4.14.6 F:..... V:..... T:.....	Item			
D12	Termination, diversion or maintenance of existing services - CLAUSE4.17.1 F:..... V:..... T:.....	Item			
D13	Services which are known to exist - CLAUSE 4.17.3 F:..... V:..... T:.....	Item			
D14	Detection apparatus - CLAUSE 4.17.4 F:..... V:..... T:.....	Item			
D15	Additional health and safety requirements - CLAUSE 4.18 F:..... V:..... T:.....	Item			
	SECTION E: SPECIFIC PRELIMINARIES Section E contains Specific Preliminary items which apply to this contract except where "N/A" (Not Applicable) appears against the item.				
E1	**PROPRIETARY BRANDED PRODUCTS** The contractor shall take delivery of, handle, store, use apply and/or fix all proprietary branded products in strict accordance with the manufacturers' instruction after consultation with the manufacturer's authorised representative. F:..... V:..... T:.....	Item			
E2	**OVERTIME** Should overtime be required to be worked for any reason whatsoever, the costs of such overtime are to be borne by the Contractor unless the Engineer/Principal Agent has specifically authorised in writing, prior to the execution thereof, that costs for such overtime are to be borne by the Employer. F:..... V:..... T:.....	Item			
E3	**AS BUILT DRAWINGS** The position of construction breaks and the extent of individual concrete pours are to be recorded by the Contractor on the Structural Engineer's drawings and are to be submitted to the Engineer/Principal Agent and the Structural Engineer for their records. F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

	SECTION E: SPECIFIC PRELIMINARIES	UNIT	QUANTITY	RATE	AMOUNT
E4	**SITE INSTRUCTIONS** Site Instructions issued on site are to be recorded in triplicate in a Site Instruction book which is to be maintained on site by the Contractor. F:..... V:..... T:.....	Item			
E5	**LABOUR RECORD** At the end of each week the Contractor shall provide the Engineer/Principal Agent with a written record, in schedule form, reflecting the number and description of tradesmen and labourers employed by him and all sub-contractors on the works each day. F:..... V:..... T:..... *Note: In the event that the contractor fails to satisfy the requirements of this specification, the Employer (Head: Public Works) may apply any of the sanctions provided in the contract. Sanctions may include the application of a financial penalty of .04% of the Contract Sum per calendar day of which the required report has not been submitted.*	Item			
E6	**PLANT RECORD** At the end of each week the Contractor shall provide the Engineer/Principal Agent with a written record, in schedule form, reflecting the number, type and capacity of all plant, excluding hand tools, currently used on the works. F:..... V:..... T:.....	Item			
E7	**NON CESSION OF MONIES** The Contractor shall not cede nor assign his rights or claims to any monies due or to become due under this contract. F:..... V:..... T:.....	Item			
E8	**SECTIONAL COMPLETION** When it is required that the contract be executed in sections or portions, the tenderer shall allow for all costs in this regard as no claim for additional costs will be entertained. F:..... V:..... T:.....	Item			
E9	**LOCAL LABOUR** It is a general requirement of this contract that persons normally resident in the locality of the works (Local Labour) be given preference for employment on the contract. Provided, however, that should adequate and appropriate Labour not be available within the locality, others may be employed subject to satisfactory proof being provided that every reasonable endeavour has been made to employ Local Labour. The Contractor shall identify the local community leaders with the purpose of negotiating with them regarding the utilization of Local Labour in the construction process. In this regard, the Contractor shall furthermore give preference, wherever possible to the employment of single heads of households, women and youth. The Contractor shall, in general, maximize the involvement of the local community. F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
E10	**IMPORT PERMITS AND DUTIES** The responsibility for obtaining the necessary import permits shall rest with the successful Tenderer. No foreign exchange will be arranged or provided by the Administration. Tenderers are to allow in their tenders and pay the ordinary levy imposed on imported items in terms of item 196.10 of Part 8 of Schedule No. 1 of the Customs and Excise Act, 1964 with effect from 1 October 1989. F:..... V:..... T:.....	Item			
E11	**CONTRACT PRICE ADJUSTMENT PROVISIONS (CPAP)** Notwithstanding anything to the contrary contained in the GCC for Construction Works 2010 2nd Edition, this Contract shall only when the Construction Period exceeds 6 months and the Contract sum exceeds R1,000,000,00 be subject to the Contract Price Adjustment Provisions Indices Application Manual for use with P0151 indices (CPAP) (Revised 1 January 2013) as published by Statistics South Africa. Tenderers are advised that with reference to Clause 3.4.6 of the Contract Price Adjustment Provisions (CPAP) Indices Applications Manual, the Head: Public Works ***will not accept the submission by Tenderers of lists of additional items.*** Where this contract is a Lump Sum contract, the contract will be subject to Contract Price Adjustment Provisions (CPAP) only where the contract period equals or exceeds 6 calendar months. The applicable work group shall be WG 180 for domestic buildings or WG 181 for commercial and industrial buildings. F:..... V:..... T:.....	Item			
E12	**EPWP CONDITIONS AND SPECIFICATIONS** **12.1 EMPLOYMENT TARGETS** E12.1 a Employment Targets The contractor needs to provide a realistic estimate on the number of jobs that the project has the potential to create throughout the project duration as the project will be implemented using labour intensive construction methods on elements where it is economical and feasible for this construction method. No of jobs to be created = ……. *[Contractor to fill in an estimated number]* F:..... V:..... T:.....	Item			
	E12.1 b Employment requirements Tenderers are advised that this contract will be subject to the Expanded Public Works Program (EPWP) aimed at alleviating and reducing unemployment. Tenderers must allow for any costs for the employement of unskilled labour as per the requirements of the EPWP program; 1. 55% of unskilled labour to be women 2. 55% of unskilled labour to be youth aged between 18 and 35 years 3. 2% of unskilled labour to be people living with disability 4. 100% Unskilled labour utilised must reside within the boundries of the Municipality Ward where this contract is executed, with preference to the local community closest or at the walking distance to the contract site. Wherever possible local skilled tradesmen are to be employed on this contract with the view to maximize utilization of local resources. F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
	E12.1 c Labour rate and payment intervals The contractor should ensure that labour rate paid to unskilled local labour is commensurate to the daily task. When determining the rate, consideration should be given to that EPWP beneficiaries are mostly bread winners in their families, as the program intends alleviating poverty. There should also be consideration that the labour rate promotes creation of expanded number of jobs created and person days of work. Contractors should make endeavours to ensure that labourers, particularly unskilled are remunerated on fortnight basis and prior notification be made should there be a shortfall on their wages. The labour rate for local unskilled shall also be determined in consideration of the location of the project, i.e. for projects implemented in urbanized municipalities will not be the same as that for rural municipalities.				
	F:..... V:..... T:.....	Item			
	12.2 LABOUR INTENSIVE CONSTRUCTION METHOD E12.2 a Labour Intensive Construction (LIC) method On site there must a person(s) having competency in managing and implementing LIC methods. *Foreman @ NQF Level 4 the Unit Standard on Implementing LIC methods on site. *Site Agent/ Managers @ NQF level 5 the Unit Standard on Manage Labour-Intensive Skills Programme both must be CETA accredited				
	F:..... V:..... T:.....	Item			
	E12.2 b Labour Intensive Construction Method Those parts of the contract to be constructed using Labour Intensive methods will be marked in the BoQ with letter LI (indicating Labour Intensive) against every item so designated. Such works will only be constructed using method so indicated. Reference to be made to Guidelines for the implementation of Labour Intensive Infrastructure projects under EPWP. "Scope of Work in Respect of Work Relating to the Expanded Public Works Programme (EPWP)"				
	F:..... V:..... T:.....	Item			
	E12.3 RECORD KEEPING 12.3.1 Every employer must keep in the project site office the following minutes of site progress minutes; contractors' monthly site progress reports; accurately recorded attendance register; proof of payment as means to verify authenticity of data in the EPWP Beneficiary form submitted with payment certificates. Copies of submitted EPWP beneficiary data forms should also be kept in the site office.				
	F:..... V:..... T:.....	Item			
	12.3.2 The employer must keep this record for a period of at least three (3) years after the completion of the project in his/her office as the project site office would have been relocated. This should be safely kept for job creation data verifications and periodical audits on projects conducted by National and Provincial Department of Public Works after one (1) or two (2) quarters of submitting captured EPWP Data to the National EPWP coordinating Department.				
	F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
	E12.4 EPWP REPORTING as per EPWP DATA FORM At the end of each month as part of site progress report and to be attached to every contractors' progress payment certificate; the contractor shall provide the principal agent & Public Works with a written records, as per EPWP data form; which will be reflecting, beneficiaries full name & surname; ID No and job description of labour employed by main contractor and sub-contractors on site. At the end of each month the contractor must submit the following documents to be attached to the Progress payment certificate: 1. EPWP monthly data collection form 2. Worker monthly payment upload 3. Worker monthly proof of payment i.e 3.1 Acknowledgement of receipt of payment or 3.2 Payslips 3.3 Bank statement highlighted the workers paid 4. Worker monthly training form 5. Monthly attendance register 6. Certified copies of ID's (once off) 7. ID size photos (once off) 8. Proof of UIF 9. Proof of COIDA				
	F:..... V:..... T:.....	Item			
	E12.5 EPWP PROMOTION 12.5.1 EPWP signage board EPWP Program at the project level shall always be promoted through have the projects signage board that embrace EPWP logo at the bottom, correct measurement for this signage board will be provided by the project leader during the site handing over meeting. the standard "HELVETIVA MEDUIM " letters are to be used . Professional title to be 10 mm above line . Line thickness to be 8 mm thick . Space between bottom of the line and bottom of the lettering below the line has to be 100 mm. Letter sizes are as follows : Helvetica meduim 100 mm black upper case to be for project name and owner . Helvetica meduim 75mm black upper case only to be used for professional titles.Project name and owner shall be black lettering on white background.board sizes are as follows : Board to be minomum 2000mm from ground level and to be constructed from reinforced formed chromadek panels minimum 0,6mm thick chromadek. The contractor is responsible for ensuring that the project board remains neatly and safely erected for the full duration including maintenance period,after which the project board and post are to be dismantled and handed to the client in good order.				
	F:..... V:..... T:.....	Item			
	12.5.2 Branding of labour apparel Contractor & Sub-contractors' labourers shall be provided with EPWP branded Personal Protective Equipment (PPE), reflector vest with EPWP wording at the back is an ideal and cost effective means of promoting program on site. The contractor is then advised to price for both item 17.5.1 and 17.5.2				
	F:..... V:..... T:.....	Item			
	E12.6 COMMUNITY LIAISON OFFICER (CLO) UTILISATION OF A COMMUNITY LIAISON OFFICER In addition to the requirements of Clause E9, contained in this document; The Contractor shall allow for and pay any and all costs necessary for the engagement of the services of a Community Liaison Officer (CLO) for the full duration of this contract In the interest of providing a sound service to both the community and the Contractor, a CLO may only manage one project at a given time. A CLO will be identified by the local structures of the ward areas and appointed following fair and transparent interviewing process, to be conducted in the presence of local structures and the contractor representative, in order to assist the Contractor in the procurement of any local labour, etc. required for this project. The Contractor is to liaise with the CLO and afford him any assistance needed in ensuring sound working relations with the local community. **Key Responsibilities of the CLO are envisaged to include and not necessary be limited to:** 1. Assisting local leadership in conducting skills and resources audit which facilitates sourcing labour from within the ward or targeted areas for employment, as required by contractor. 2. Assisting in sourcing labour-only domestic sub-contractors and the procurement of materials from local resources, as required by the contractor. 3. Assisting the contractor by identifying areas of potential conflict and or threats to the project or to stakeholders in the project and recommend appropriate action to the contractor. 4. Assisting contractor and stakeholders in the project in the resolution of any conflict which may arise. 5. Establishing and ensuring that sufficient and open communication channels between the contractor and the work force are maintained. 6. Establish and ensuring that efficient and open communication channels between the contractor and the community are maintained 7. Identifying and reporting to the Contractor regarding issues where communication between stakeholder is necessary, recommend courses of action and facilitate such communications				
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
	8. Assisting the Contractor and the work force in the establishment of grievance procedures and necessary recommenda-tion to the Contractor regarding the grievances and solution thereto. 9. Attending to site meetings and project implementation meetings as required by the Contractor and prepare periodic reports as may be required by the Contractor from time to time. 10. Attending to such other duties which are consistent with the functions of a CLO, as may be required by the Contractor from time to time. Tenderers are to price twice the rate of unskilled local labour rate against this item for any and all costs arising out of compliance with the foregoing and in the event of a Tenderer failing to price against this item or making inadequate financial provision against this item for compliance as aforesaid, then no claim for costs or additional cost incurred will be entertained by the Head: Works F:..... V:..... T:.....	Item			
	E12.7 SKILLS DEVELOPMENT ON SITE Contractor in conforming to the object of EPWP that its beneficiaries need to be capacitated with skills that will render them employable in the future. It is then the responsibility of the Contractor that mandatory life skills are provided to 100% of workforce on site and on the job training to labourers from whom the potential for further development has been identified. The latter is not mandatory to all as it covers technical skills. Contractor should also make provision for the possibility that there might be local youth that will need to be placed on the project with an intention to be provided support towards improving their level of competency and productivity. Contractor shall also provide all necessary on-the-job training to targeted labour to enable such labour to master and advance on techniques required to undertake the work in accordance with requirements of the contract in a manner that does not compromise workers health and safety. F:..... V:..... T:.....	Item			
	E12.8 LABOUR ONLY Sub Contracting for local emerging enterprises Tenderer's are advised that this contract is subject to the Expanded Public Works Programme (EPWP) and the following criteria will apply: <u>African Equity Ownership</u> a) The Tenderer is to allow for 5% of the total value of works to be undertaken by a Priority Population Group. This percentage excludes the costs of employing local unskilled labour. The allocation of this percentage from the Project, the screening of people, the selection of skills, will be for the Contractor to adjudicate. b) The Priority Population Group consists of women, youth and disabled people. c) The Contractor is to give first option for prospective PPG's from the surrounding areas of the Project. Should there be insufficient suitable people fitting the criteria of PPG's, the Contractor may hire people from further afield. This is to be done only after consultation with the Department of Works EPWP Co-ordinator and the Community Liaison Officer (CLO). d) A Mentor is to be employed by the Contractor, in consultation with the Department of Works for the purposes of quality control and liaison between the Contractor and the selected PPG's on site. The mentor will be responsible for ensuring an acceptable level of quality workmanship and that such work carried out by the PPG's is executed within the time frames stipulated. In so far as possible, the Contractor is encouraged to expand the PPG's skills, knowledge and performance levels. F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
	TENDERER'S TO NOTE CONDITIONS a) The contract to be entered into between the Contractor and the PPG's will be a LABOUR ONLY sub-contract. b) The Contractor will be responsible for ensuring that all materials for use by the PPG's in the works are to be on site timeously. The Contractor shall liaise with The Mentor and PPG to determine the nature and extent of materials required and the lead time necessary. c) The Contractor shall be responsible for the overall programming of the Works and he is to allow for monitoring the PPG's programme and progress. d) In conjunction with the Mentor, he is to allow for the supervision and mentoring (where necessary) of the PPG to ensure quality and adherence to standard building practice e) The Contractor is to allow for extra storage facilities on site for the PPG's tools and equipment. f) Basic tools shall be provided by the PPG's and where these are not available; the Contractor will supply him with the necessary tools and equipment and deduct the costs thereof from the interim claims made by the PPG. g) Work requiring specialized tools will be provided free of chargeby the Contractor with the provision that these be returned upon completion of the Work. CO-ORDINATION The Contractor is to co-ordinate the work of all the PPG's, Sub-Contractors and Nominated Sub- Contractors appointed direct by the Employer in such a manner and at all times as will suit the building programme and he is to allow adequate access, for the PPG's, where required, to carry out their work in an efficient manner as no claims for extras in this connection will be entertained. F:..... V:..... T:.....	Item			
	ATTENDANCE The Contractor may allow for attendance upon the PPG's concerned to execute the work. The Contractor is to allow the PPG's the use of any scaffolding belonging to him while it remains so erected on the site. Where scaffolding is necessary for the use by any PPG and the Contractor has not erected any for his own use or has removed same after his own use, the Contractor shall supply sufficient scaffolding to the PPG to be erected and dismantled by the PPG and returned to the Contractor. This attendance upon PPG's to execute the work is to include for the scaffolding provisions as aforesaid and, in addition, is to include for co-operating to the fullest extent with all the parties, attending on off-loading materials, providing suitable storage for tools and materials used by the PPG's, use of general facilities such as latrines, etc., supply and cost of power, lighting, water and the like. F:..... V:..... T:.....	Item			
	E12.9 EPWP CONTRACT FOR LABOUR It is compulsory that shortly after the contractor and or sub contractor has appointed local labour, the employment contract should be signed by both parties, prior to commencement with works on site. The employment contract forms part of the Ministerial Determination or from the regional EPWP officials. Each contract will lapse at the end of each financial year therefore requiring the Contractor to do a renewal of each contract should the need of employment still exist for that particular labourer. F:..... V:..... T:.....				
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
	E12.10 EPWP SCOPE of WORK **Note:** Contractors are to price any item on the Bill of Quantities having below, bearing in mind that they are regarded as main sources of job creation, whether sub contracted or undertaken by the main contractor. Elements on the scope of work where application of Labour Intensive Construction methods as will indicated with letters (LI) are regarded feasible are as follows; i) Excavating trenches for foundations and any other civil works with the depth not more than 1.5 m ii) All masonry works which include concrete mixing on site; brickwork; plastering; screed works; jointing; etc. iii) Painting, Plumbing, Ironmongery; roof cladding; glazing; tilling; carpentry; flooring; waterproofing; etc. F:..... V:..... T:.....	Item			
	Note: It is a general requirement of this contract that persons normally resident in the ward of the works (local labour) be given preference for employment on the contract. Provided, however, that should adequate and appropriate labour not be available within the ward, others may be employed subject to satisfactory proof being provided that every reasonable endeavour has been made to employ local labour (Local Sub-contractor(s); Skilled; Semi-Skilled and Unskilled). The contractor shall in consultation with the local community leaders with the purpose of negotiating with them regarding the utilization of local resources in the construction process. In this regard, the contractor shall furthermore give preference, wherever possible to the employment of single heads of households, women and youth as well as families declared as most indigent by War on Poverty/ Sukuma Sakhe program profiling process. The contractor should aim, in general, to maximise the involvement of the local community, however workers from other communities should not exceed 20% of all persons working on the project, where local employees possess skills at level of competency that meet contractors requirements. <u>Payment for the labour-intensive component of the works</u> Payment for works identified in the Scope of Work as being labour-intensive shall only be made in accordance with the provisions of the Contract if the works are constructed strictly in accordance with the provisions of the Scope of Work. Any non-payment for such works shall not relieve the Contractor in any way from his obligations either in contract or in delict. <u>Linkage of payment for labour-intensive component of works to submission of project data</u> The Contractor's payment invoices shall be accompanied by labour information for the corresponding period in a format specified by the employer. If the contractor chooses to delay submitting payment invoices, labour returns shall still be submitted as per frequency and timeframe stipulated by the Employer. The contractor's invoices shall not be paid until all pending labour information has been submitted. <u>Applicable labour laws</u> The current Ministerial Determination (also downloadable at <u>www.epwp.gov.za</u>) Expanded Public Works Programmes, issued in terms of the Basic Conditions of Employment Act of 1997 by the Minister of Labour in Government Notice , shall apply to works described in the scope of work as being labour-intensive and which are undertaken by unskilled or semi-skilled workers. F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
E13	**HIV/AIDS AWARENESS** Tenderers are to price against the following items for compliance with the SPECIFICATION FOR HIV/AIDS AWARENESS bound into this document (The clauses referred to are those of the Specification for HIV/AIDS)				
E13.1	Provide and maintain a condom dispenser in terms of Clause 5.1a) F:..... V:..... T:.....	Item			
E13.2	Provide and maintain HIV/AIDS awareness posters terms of Clause 5.1b) F:..... V:..... T:.....	Item			
E13.3	HIV /Aids Awareness Programme on Site for not less than 90% of workers inclusive of all direct and indirect costs; Engage a qualified service provider as described in the scope of works to conduct an HIV Awareness Programme in terms of Clause 5.2.1a) F:..... V:..... T:.....	Item			
E13.4	Arrange for workers to attend the HIV Awareness Programme in terms of Clause 5.2.1b) F:..... V:..... T:.....	Item			
E13.5	**Reporting** Prepare and attach to claims for payment a brief report in terms of Clause 5.3 (see also HIV/STI Compliance Report included with this document). F:..... V:..... T:..... *Note: In the event that the contractor fails to satisfy the requirements of this specification, the employer (Head: Public Works) may apply any of the sanctions provided for in the contract. Sanctions may include the application of a financial penalty of .04% of the Contract Sum per calendar day of which the required reports has not been submitted.*	Item			
E14	**OCCUPATIONAL HEALTH AND SAFETY ACT NO. 85 OF 1993** Tenderers are to allow for costs in providing a project specific ' Construction Phase Safety, Health and Environmental Plan' in accordance with "Section 2 - Specification Data associated with SANS 1921-1:2004" clause C4.18 in "Part C3 - Scope of Work" F:..... V:..... T:.....	Item			
E15	**NOTICE BOARD, SITE OFFICE, ETC.** Tenderers are to allow for the provision and removal of a project notice board and a site office in accordance with the Principal Agent's requirements. F:..... V:..... T:.....	Item			
E16	**IMPORTED MATERIALS AND EQUIPMENT** Where imported items are listed in the tender documents, the tenderer shall provide all information called for, failing which the price of any such item, material or equipment shall be excluded from currency fluctuations. (***Refer to T2.14 - Schedule of Imported Materials and Equipment*** . F:..... V:..... T:.....	Item			
E17	**CONTRACT DOCUMENTS** The drawings issues with these Tender documents do not comprise the complete set but serves as a guide only for tendering purposes and for indicating the scope of works to enable the Tenderer to acquaint him with the nature and extent of the works and the manner in which they are to be executed. Should any part of the drawings not be clearly legible to the Tenderer he shall, before submitting his Tender, obtain clarification in writing from the principal agent. F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
E18	**GENERAL PREAMBLES** The Document Preambles will be the "ASAQS Model Preambles for Trades – 2008" and is obtainable from the various Regional Office's of the Department of Public Works and shall be read in conjunction with the Bills of Quantities and be referred to for the full descriptions of work to be done and materials to be used. F:..... V:..... T:.....	Item			
E19	**TRADE NAMES** Wherever a Trade Name for any product has been described in the Bills of Quantities the Tenderer's attention is drawn to the fact that any other product of equal quality may be used subject to the written approval of the Principal Agent being obtained prior to the closing date for submission of Tenders. F:..... V:..... T:.....	Item			
E20	**EXISTING PREMISES OCCUPIED** Refer to Scope of Works Part C3 of this Tender Document for information on the occupation of existing buildings. F:..... V:..... T:.....	Item			
E21	**INACCURATE AND DEFECTIVE WORK EXECUTED UNDER PREVIOUS CONTRACT** The contractor shall, after taking possession of the site and before commencing the work, check all levels, liners, profiles and the like and satisfy himself as to the dimensional accuracy of all work executed under the previous contract which may affect his work. Should any inaccurate or defective work be found, the contractor shall immediately notify the principal agent in writing requesting his instructions with regard thereto and afford every facility to those rectifying such inaccurate or defective work. F:..... V:..... T:.....	Item			
E22	**VIEWING THE SITE IN SECURITY AREAS** If the site is situated in a security area and the Tenderder must arrange with the Authorities to obtain permission to enter the site for Tenderding purposes. F:..... V:..... T:.....	Item			
E23	**COMMENCEMENT OF WORKS IN SECURITY AREAS** If the works falls within a security area, the contractor must arrange with the Authorities and give the necessary notices before commencement of the works. Should the contractor fail to make such arrangements, admission to the site may be refused and any additional costs will be for the contractor's account. F:..... V:..... T:.....	Item			
E24	**ENTRANCE PERMITS TO SECURITY AREAS** If the works fall within a security area, the contractor shall obtain entrance permits for his personnel and workmen entering the area and shall comply with all regulations and instructions which may be issued from time to time regarding the protection of persons and property under control of the Authority. F:..... V:..... T:.....	Item			
	Carried forward to collection			R	

		UNIT	QUANTITY	RATE	AMOUNT
E25	**SECURITY CHECK OF PERSONNEL** The principal agent may require the contractor to have his personnel and workmen, or a certain number of them, security classified. In the event of the principal agent requesting the removal of a person or persons from the works for security reasons, the contractor shall do so forthwith and shall thereafter ensure that such person or persons are denied access to the works and the site and/or to any document or information relating to the works. F:..... V:..... T:.....	Item			
E26	**PROHIBITION ON TAKING PHOTOGRAPHS** In terms of article 119 of the Defence Act, 44 of 1957, it is prohibited to sketch or to take photographs of any military site or installation or any building or civil works thereon or to be in possession of a camera or other apparatus used for taking photographs, except when authorised thereto by or on behalf of the Minister. The same prohibition is also applicable to all Correctional Institutions in terms of article 44.1(e) of the Correctional Services Act 8 of 1959. F:..... V:..... T:.....	Item			
E27	Management of Water Water for Construction purposes must be obtained from alternative water sources (i.e. supply other than water that is produced and distributed by a regulated water service authority from a licenced water treatment works for human consumption), eg dams, rivers, boreholes, springs, rainwater harvesting, recycled sewerage water,etc. The alternative water source shall not be of an inferior quality / standard than that required for construction purposes. The client reserves the rigfht through his agents to test such supplies or request certificates confirming the grade and nature of the water supply. Relevant knowledge of the respective area will be an advantage.				
	Carried forward to collection			R	

SECTION 1

SUMMARY – PRELIMINARY & GENERAL

Collection	Page No.	Amount	
	1	R	
	2	R	
	3	R	
	4	R	
	5	R	
	6	R	
	7	R	
	8	R	
	9	R	
	10	R	
	11	R	
	12	R	
	13	R	
	14	R	
	15	R	
	16	R	
Carried forward to Final Summary		R	

Section No. 1
Preliminary & General
Summary

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

PART C2.3 BILL OF QUANTITIES

SPECIFICATION FOR THE UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS FORT NAPIER HOSPITAL

BILLS OF QUANTITIES

INDEX PAGE/S

GENERAL NOTES	133-135
BILL NO. 2 - GENERAL ITEMS	136-139
BILL NO 3 - REMOVAL OF EXISTING WORK	161-163
BILL NO 4 - CONCRETE, FORMWORK AND REINFORCEMENT	164
BILL NO 5 - WATERPROOFING	165
BILLL NO 6 - ROOF COVERINGS	166
BILL NO 7 - CARPENTARY AND JOINERY	167
BILL NO 8 - IRONMONGERY	168
BILL NO 9 - PLASTERING,PLUMBING AND GLAZING	169
BILL NO 10 - PAINTWORK	170
BILL NO 11 - EXTERNAL WORKS	171
BILL NO. 12 - TRENCHING AND MANHOLES	172
BILL NO. 13 - CABLING BUSBARS AND TERMINATIONS	173 - 177
BILL NO. 14 - MV SWITCHGEAR AND MINISUBS	178 - 184
BILL NO. 15 - LOAD BALANCING	185
BILL NO. 16 - SMALL POWER AND LIGHTING	186
BILL NO. 17 - EARTHING	187 - 188
SUMMARY PAGE	190

BILL OF QUANTITIES

GENERAL NOTES

1. This Bill of Quantities forms part of, and must be read in conjunction with the complete specification and must be submitted, duly completed, on the closing date of tenders.

2. **Tenderers must complete the Bill of Quantities and detail the unit rate and total amount of each item. Failure to do so may render the tender invalid**
The "Total" shall constitute the tender price for adjudication.

   Tenderers are advised to check their item extension and total additions as arithmetical errors occurring in the priced Bill of Quantities cannot be considered as having an effect on the tender amount.

3. No alteration, erasure or addition is to be made in the text of the Bill of Quantities. Should any alteration, erasure or addition be made it will not be recognised but the original wording of the Bill of Quantities will be adhered to.

   The Engineer will check the completed Bill of Quantities and reserves the right to adjust any individual price and to rectify any discrepancy whilst the total tender price as quoted remains unaltered.

4. The quantities given in the Bill for cable, cable markers, earth wire laid with cable, overhead conductors, overhead earth wire and excavations cannot be regarded as exact and are subject to measurement on site after completion of the service and adjustments will be made according to the unit rates given in the Bill.

   All other quantities will not be measured on site.

   In the event of discrepancies between the drawings, specifications and Bill of Quantities the Engineer shall decide whether the work as executed shall be remeasured on site or whether remeasurement shall be effected from the working drawings only.

5. The Bill of Quantities is to be used for pricing and financial purposes only. The drawings take precedence over the particular (project) specification but should be used in conjunction with these specifications. The Project Specification takes precedence over quality specifications and the Bill of Quantities.

   NOTE:
   Checking of Cable and Overhead Conductor Lengths. Notwithstanding the fact that lengths of cables and overhead conductors, as given in the Bill of Quantities, have been measured from scaled drawings, the Contractor shall check such lengths on site before ordering the cable as he will not be paid for excess cable after the completion of the service. Any allowance for off-cuts shall be made in the unit rates. The final measurements shall be based on the nett route length of the cables and overhead lines concerned. installed in accordance with the specification. However, the onus is on the Contractor to prove compliance with the specification.

6. The unit prices quoted in the Bill of Quantities shall include for such small materials as are required for the complete installation in accordance with the specification.

7. **Bill No. 1 is to be regarded as fixed and will not be adjusted for variations in the final contract value or contract period.**

   NOTE:

   Tenderers may not include the costs of the items of Bill No. 1 in the unit rates for items in the remainder of the Bill of Quantities. Bill No. 1 is to be completed as indicated.

   Failure to comply will result in the Engineer arbitrarily adjusting rates to exclude Preliminary and General Costs.

8. Unit prices for the same items in different Bills shall in all cases be the same, and in the case of differences, the Engineer reserves the right to change such unit prices when the completed list is checked, without adjusting the tender price.

9. The total for each page of each Bill is to be carried forward to the collection page at the end of each Bill.

10. P.C., Provisional and Contingency allowances, items and sums shall be expended as directed by the Engineer, and any balance remaining shall be deducted from the amount of the contract sum. Tenderers may not regard any unspent moneys as forming part of the final contract value.

    Variation Instruction No. 1 will be issued after award of the contract to omit all P.C., Provisional and Contingency sums/allowances from the contract and authorized contract value.

11. Variation work, as well as the items described above, shall be measured as executed, and paid for according to unit prices in the Bill of Quantities. Where unit prices are not available, the work shall be priced, in conjunction with the Engineer, at current rates.

12. Unless otherwise specified in the Bill of Quantities, all items are to be priced on the basis of supply, delivery, offload, installation, connection, testing and commissioning.

    All prices are to be EXCLUSIVE OF V.A.T but inclusive of import duties, surcharges, commissions to third parties, etc., where applicable. The foregoing items, as well as the Contractor's handling, financing and profit mark-up, is not to be separately detailed, and must be included in the cost rates.

13. Unless otherwise stated, all measurements are net, in accordance with the drawings, and no allowance has been made for wastage.

14. The Employer reserves the right to increase or decrease the extent of the contract works, without restraint, on total value of variations issued relevant to any particular item in the Bill of Quantities, by issuing written variation instructions to omit or add, as may be required, the supply and/or installation of any item of equipment or work, whether listed in the Bill of Quantities or not, and without affecting the unit cost rates indicated in the Bill of Quantities or Preliminary and General items.

15. In the event that Tenderers disagree with the measured quantities the tender should be qualified accordingly, listing the items and quantities in question.

16. The unit prices quoted in the Bill of Quantities must include for small installation materials such as nuts, bolts, nails, saddles, screws etc. as are required for the satisfactory complete installation in accordance with the specification.

17. Unless otherwise stated in the Bill, the unit cost rates shall be based on the following:

    The rate for conduit boxes and for outlet boxes up to and including 100 x 100 mm shall be the same regardless of the number of entries.

    The rate for conduit and outlet boxes shall include for fixing to the conduit with lock and bushnuts as may be required and for fixing to the building structure.
    The rate for outlet boxes shall be without covers and draw boxes shall be complete with covers and screws.
    The rate for industrial switch and plug units shall include for the relevant enclosure and fixing to conduit and building structure.

    The rate for light switches, switch plugs, dimmer units, etc., shall include for screws, cover plates and fuses/breakers where applicable and for connection of wiring thereto.

    The rate for conduit up to and including 25 mm diameter shall include all couplings, bends, boxes etc. as may be required.

    The rate for luminaires and accessories shall include for connection of the wiring thereto.

18. All measurements are based on the most economical route lengths without any allowance for wastage, threading, jointing or slack.

19. In the case of wiring in conduit, an allowance of 300 mm per wire outlet box position has been made and in the case of cables and wiring entering switchboards, an allowance of 1000 and 2000 mm has been made for termination purposes in sub-distribution and main distribution boards respectively.

20. It should be noted that, notwithstanding anything to the contrary, any items completed or listed in the Bill of Quantities by the Tenderer will not be taken into account, will not be subject to re-measurement, and will not be regarded as a Bill of Quantities item.

21. Where equipment is specified by name, the tenderer must price on this basis. Alternatives may be offered tenderers but the use of which is subject to written approval by the Engineer.

	BILL No. 2 GENERAL ITEMS	QTY	UNIT	RATE	TOTAL
a)	Test the new electrical installation (including diesel generators) in conjunction with the other services, viz., small power and lighting, electrical, air-conditioning security/fire detection system, fire system	Item			
b)	Compile all typed test reports, marked up "as built" drawings, package in plastic covered A4 files and plastic envelopes correctly indexed, and submit to the Engineer for review. [tenderers to take note of sample O&M manual]	Item			
c)	Update as built drawings and test results as necessary, and submit 3 copies to the Engineer complete with all the suppliers' information indexed correctly	Item			
d)	Allowance to provide a registered electrician (familiar with the complete installation) on site 8 hours a day, 7 days days a week for the 1 month from official handover to deal with any possible problems and familiarising the building electrcian with the installation	Item			
e)	Liaise with Fort Napier Hospital Management team for all necessary shut down work as required within the contract	Item			
f)	Liase with Fort Napier management to tie in main switchrrom into the MV ring on a temporary and permanent basis	Item			
g)	Inspect and take over electrical manholes prior to any work starting on site	Item			
h)	Allow two full days to cable trace the existing MV cable network to verify cable routes and to correct the existing drawing issued	Item			
	PADLOCKS				
i)	Supply 30 mm Viro padlock complete each with 3 keys with (correctly labelled) keyed alike keys	6	No.		
	LECTERN DESKS				
j)	Supply and position in main switch room supawood lectern desk as per detail	1	No.		
k)	Supply blank hard covered horizontally and vertically aligned 100 page A4 log book labelled and left in lectern desk	1	No.		
	SIGNAGE				
l)	Supply and install FB36 5 in 1 chromodeck black writing on yellow background sign (925 mm x 925 mm) fixed to brick wall with plugs in substation	2	No.		
	CARRIED TO COLLECTION PAGE			R	

	BILL No. 2 GENERAL ITEMS	QTY	UNIT	RATE	TOTAL
a)	Supply and install WW28 chromodeck black writing on yellow background (450 mm x 450 mm) "UNAUTHORISED ENTRANCE PROHIBITED" with brass wood screws to outside of substation doors	2	No.		
b)	Supply and install '11 000 VOLTS" danger stickers (50 mm x 100 mm) to equipment as indicated by the Engineer on site	30	No.		
c)	Supply and install 400 VOLT danger sticker (50 mm x 100 mm) to equipment as indicated by the Engineer on site	30	No.		
	GALVANISING				
d)	Allow to cold galavanise all cut ends (threaded rod, cable ladder, cable tray, trunking etc.)		Item		
	PAINTING / REPAIR				
e)	Allow for all loose paint to be removed from existing substation walls and sanded down (main switch room, Sub A RMU room and Sub A transformer room)	3	No,		
f)	Allow to seal all walls with waterproofing product	3	No.		
g)	Allow to inspect all roofs on the various buildings	2	No.		
h)	Allow to seal roofs against potential leaks using acrylic waterproofing system	2	No.		
i)	Completely paint out rooms with external suitable paint (similar to Dulux weatherguard) matt white, 2 coats	3	No.		
	LABELLING				
	Supply and install Trasp Grapoplast labels comprising of 100 mm transparent sleeve, 12 No. numerical/alphabetical elements and 2 No. 5 mm x 150 mm cable tie as follows:-				
j)	MV cabling termination	30	No.		
k)	MV cabling in substation trench	30	No.		
l)	MV cabling in manhole	10	No.		
m)	Earth wire termination	30	No.		
n)	Earth wires in substation trench	12	No.		
o)	Earth wire in manhole	16	No.		
	CARRIED TO COLLECTION PAGE			R	

	BILL No. 2 GENERAL ITEMS	QTY	UNIT	RATE	TOTAL
	GENERATORS				
a)	Allow to service all generators on site to ensure correct operation before commencement of any work on site	4	No.		
b)	Supply deisel to run generators overnight for the various shuts	1400	l		
	TESTING				
c)	Testing equipment to carry out site tests as specified for cables, relays, switchgear and transformers, generators etc.	Item			
d)	Test each substation installation in conjunction with the other services, viz., electrical, air-conditioning security/fire detection system, fire system, domestic water, lifts and escalators, sump pumps, smoke extract etc. as specified	5	No.		
	GENERAL				
e)	Allowance to clean out main switch room (inclusive of MV switchgear, battery charger etc.) with vacuum cleaner prior to final testing	1	No.		
f)	Allowance to clean out Substation A (inclusive of transformers, MV switchgear, Main LV board etc.) with vacuum cleaner prior to final testing	1	No.		
g)	Allow to arrange shut downs with Msudusi municiplaity as required	2	No.		
h)	Supply and install A0 picture frames	2	No.		
i)	Allow to laminate and install SLD of the site	6	No.		
	CARRIED TO COLLECTION PAGE			R	

COLLECTION PAGE for BILL No. 2

TOTAL from PAGE No. 136	R
TOTAL from PAGE No. 137	R
TOTAL from PAGE No. 138	R
TOTAL FOR BILL No. 2 CARRIED TO SUMMARY	R

BILL No. 3 REMOVAL OF EXISTING WORK	QTY	UNIT	RATE	TOTAL
Removal of asbestos material: All preparatory work, alterations etc to existing asbestos cement roof sheeting, gutters, rainwater pipes etc. is to be carried out strictly by an approved and certified specalist company and in accordance with statutory requirements (OHS Act 1993 - Asbestos regualtions 2001) and all necessary precaultions must be taken when working with and disposing of asbestos cement products and the dispaosal of the waste water resulting from cleaning operations etc.				
Breaking up and removing reinforced conctete				
1 150mm thick surface bed	65	m^2		
2 hacking up/off internal plaster from walls and columns	1	m^2		
3 taking out timber dounble door and timber frame 1600x2100mm	1	No.		
4 taking out glazed steel window not exceeeding 2.5m^2	3	No.		
taking down and removing roofs as follows:				
5 pitched corrugated iron roof sheeting	43	m^2		
6 fibre cement roof sheeting	43	m^2		
7 fibre cement fascias and barge boards inclusind all fixings etc.	27	m		
8 125x75mm fibre cement eves gutters and rainwater pipes including all fixings	22	m		
9 taking down double pitched roof not exceeing 50 degrees including roof membrane timber and/or steel trusses and purlins eaves soffit coverings (7700x4470x660mm)	34	m^2		
10 raking out defective motor joints of exisitng face brickwork to receive plaster	104	m^2		
11 hacking face of exisiting bagged brickwork to receive plaster	213	m^2		
12 conctere spalling repairs - not exceeding 30mm thick	32	m^2		
13 conctere spalling repairs - exceeding 30mm thick	24	m^2		
stiching repairs to brickwork				
14 Light scabble the entire exposed face of the brick wall to remove all plaster and loose spalled concrete and high pressure wash	30	m2		
15 mark any cracks as directed and cut grroves 40mm widex 40mm deep over the crack using a angle grinder taking care not to damage the exsting rebar	90	No.		
CARRIED TO COLLECTION PAGE			R	

BILL No. 3 REMOVAL OF EXISTING WORK	QTY	UNIT	RATE	TOTAL
Stich cracks with Y8 rebar at 250mm spacing placed either horizontal or vertical and grouted into 10mm deep slots cut into the brickwork and with 60mm deep x 10mm diameter drill holes at each end to accommodate the bends of the reinforcing rods approximately normal to the crack orientation. Fill the grooves with Sika plasterstick and entirely embeded straight 400mm long Y8 bars into the expoxy adhesive. One continuous Y8 bar per groove	90	No.		
450mm wide galvanised chicken wore mesh fixed with galvanised ties or staples at 150mm centers	20	m		
Remove all excess epoxy adhesive off the surface	15	m^2		
high pressure clen face brick walls	214	m^2		
budgetary allowance for unforseen work				250 000,00
profit and attendance on the above				
CARRIED TO COLLECTION PAGE			R	

COLLECTION PAGE for BILL No. 3

TOTAL from PAGE No. 140	R
TOTAL from PAGE No. 141	R
TOTAL FOR BILL No. 3 CARRIED TO SUMMARY	R

BILL No. 4 CONCRETE, FORMWORK AND REINFORCEMENT	QTY	UNIT	RATE	TOTAL
1 Reinforced 25MPa/19mm concrete cast into panels onto waterproofing	10	m^3		
2 making and testing 150x150x150mm concrete stregth test cube	No.	16		
3 power flaot surface beds, slabs etc. to falls	65	m^2		
4 Type 193 fabric reinforcement in concrete surface beds, slabs	37	m^2		
5 Type 311 fabric reinforcement in concrete surface beds, slabs	28	m^2		
CARRIED TO SUMMARY PAGE			R	

BILL No. 5 WATERPROOFING	QTY	UNIT	RATE	TOTAL
Damp proofing of walls and floors				
1 one caot "Brixeal" or equally approved on face brick walls	176	m^2		
2 two coats "sika cemflex" or equally approved with embeded cemflex fabric where specified	213	m^2		
3 one coat "Sika plasterstik or equally approved bonding agent	31	m^2		
4 one layer "derbigum SP4" or equally appoved on concrete roof slab including turn ups	84	m^2		
5 one coat "centre bitumen primer" or equally approved on concrete roof including turn ups	84	m^2		
6 two coats 'silvakote" or equally approved bituminous aluminium paint to concrete roof including turn ups	84	m^2		
7 allow to apply "Bostik" or equally approved silicone sealant in joints between frame and walls	10	m		
CARRIED TO SUMMARY PAGE			R	

BILL No. 6 ROOF COVERINGS	QTY	UNIT	RATE	TOTAL
Supply and install double interlocking concealed fix Klip tite 700 profile roll formed in continuous lengths and cut to length from certifed 0.58mm Z274 galvanised steel. A certificate verifiying compliance shall be issued by the manufacturer, sheeting to be finished with a Chromadek ultim colour fish to one side with a pebble grey backing coat to the other to be fixed to every purlin by means of KL700 clips using appropreiate self tapping screws to steeel purlins				
roof covering with pitch not exceeding 35 degrees	98	m^2		
ridge cappings 462mm girth	8	m		
bullnose capping to match exisitng profile	10	m		
headwall flashing 375mm girth	10	m		
moulded narrow and board rib polyethelene filler blocks	10	m		
Sisalation "FR 430 instustrial" sheeting laid tuat over purlins and fixed concurrent with roof covering with minimum 150mm stapled laps including galvanised steel straing wires at not exceeding 400mm centers and double sided tape at edges where required	65	m^2		
CARRIED TO SUMMARY PAGE			R	

BILL No. 7 CARPENTRY AND JOINERY	QTY	UNIT	RATE	TOTAL
1 Design, supply and install roof truss system size complete and in accordance with SANS including battens at hips, valleys, longintudual bracing etc, all in accordance with the specifciations to buialing sixe approximately 9960x5080mm on plan and with a clear span between walls approximately 9 320mm	1	No.		
2 Design, supply and install roof truss system size complete and in accordance with SANS including battens at hips, valleys, longintudual bracing etc, all in accordance with the specifciations to buialing sixe approximately 7700x4470mm on plan and with a clear span between walls approximately 7 100mm	1	No.		
3 Provide manufacture and installation certificates (TR1 and TR2) to be supplied by the contractor and approved by the consulting structural engineer after manufacture and installation respectively		Item		
Sawn soft wood				
4 38x114mm Wall plates	54	m		
5 50x76mm Purlins	151	m		
6 76x76mm splayed purlins	45	m		
7 Wrought faces on sawn timbers	10	m^2		
8 Two coats creosote on sawn timbers	10	m^2		
9 75x287mm saligna beams bolted to brick piers	10	m		
10 "teco" or equally approved hurricane clpis	240	No.		
11 2.5mm diameter galvanised wire tie 400mm girth wrapped				
12 aroudn rafter and purlin with ends tied together	120	No.		
13 "Everite flexit" 12x220mm facias boards fixed to ends of rafters including galvanised steel H profile joint strips	25	m		
12x80x220mm angle section barge boards fixed to ens of rafter				
14 including galvanised steel H profile joint strips	22	m		
15 9mm thick eaves soffit covering including brandering	15	m2		
Flush panle solid doors with "Sapele" or equally approved				
16 44mm thick double door size 1677x20323mm high	1	No.		
17 framed frames wrought meranti 76x114mm	6	m		
CARRIED TO SUMMARY PAGE			R	

BILL No. 8 IRONMONGERY	QTY	UNIT	RATE	TOTAL
"Union" or equally approved				
1 100mm brass hinge	6	No.		
2 2277-103 SS four lever lockset	1	No.		
3 CZ 682-13 CH gower lever handle	1	No.		
4 CZ8731SC door stop	2	No.		
5 Budgetary allowance for subsation signage		Item		20 000,00
6 Profit and attendance on the above				
Standard industial windows by "Durowin" or equal and approved unpainted including burglar bars expanded mesh fixed to galvanised mild steel 50x50mm angle frame sized to suit per schedule (600x900mm) and bolted to brickwork				
7 Windows size 533x949 mm high	3	No.		
CARRIED TO SUMMARY PAGE			R	

	BILL No. 9 PLASTERING, PLUMBING, GLAZING	QTY	UNIT	RATE	TOTAL
	Coloured granolithic shall be tinted with an approved colouring pigment mixed into a true or even colour				
1	screeds power flaoted on concrete 5mm thick on floors	65	m^2		
2	cement palster on walls	214	m^2		
3	cement palster on narrow widths	15	m^2		
	external plaster				
4	cement palster on walls	176	m^2		
5	cement palster on narrow widths	15	m^2		
	Rainwater disposal 0.8mm seamless aluminium				
6	150x75mm ogee eaves guters	25	m		
7	Extra over eaves gutter for stopped end	6	No.		
8	Extra over eaves gutter for outlet for 110mm pipe	5	No.		
9	Extra over rianwater pipe for bend	10	No.		
10	Extra over rainwater pipe for shoe	5	No.		
11	"Marley vynadeep" uPVC 110mm rainwater pipes	21	m		
	6mm clear toughened safety glass puttied in with steel window putty as per Sans 10400 Part N				
12	Panes exceeding 0.1m2 and not exceeding 0.5m2	3	No.		
	CARRIED TO SUMMARY PAGE			R	

	BILL No. 10 PAINTWORK	QTY	UNIT	RATE	TOTAL
	One coat alkali resistant primer and two coats "Plascon professional superior low sheen code (PEM 1000/TLS)/ professional gypsumand plaster primer code (PP700)" or other approved acrylic emulsion paint				
1	Walls	214	m^2		
	One Coat "Plascon Professional (PP 200) or equaly approved damp plaster primer and two finshing coats "Plascon professional supper matt (PEM 900/TSA) or equally approved onto conctrete				
2	soffit and slabs	65	m^2		
	External One coat "Plascon professional superior low sheen (PEM 1000/ TLS)/ Professional gypsum and plaster primer code (PP700)/ Professional waterproofing compund (PWC520)" paint for exterior use or other approved acrylic emulsion paint				
3	Walls	176	m^2		
	Plascon nuroof (TRP200/ bonding liquid (CV114) or equally				
4	approved onto fascias and barge boards	21	m^2		
	Plascon Velvaglo plus metalcare and undercoat onto				
5	Corrugated iron roof sheeting	98	m^2		
6	windows and burgular bars	4	m^2		
7	plascon woodcare woodcoat polyurethane on doors	7	m^2		
	plascon merit plaster primer and two coats plascon				
8	velvaglo or equally approved onto trusses	40	m^2		
	CARRIED TO SUMMARY PAGE			R	

BILL No. 11 EXTERNAL WORKS	QTY	UNIT	RATE	TOTAL
Digging up and removing rubbish, debris, vegetation, hedeges, shurbs and trees not exceeding 200mm girth	20	m^2		
Earthworks for V drains Excavation in earth not exceeding 1m deep for reducing levels under floors	24	m^3		
Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	24	m^3		
keeping excavations free of all water other tan subterranean		Item		
Earth filling supplied by the contractor compacted to 95% Mod AASHTO density	14	m^3		
Coarse river sand supplied by the contractor under floors etc.	2	m^3		
In-situ dry density test in accordance with method a10(a) of TMH 1	4	No.		
Compaction of ground surface under floors etc including scarifiying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 95% Mod AASHTO density	47	m^2		
Soil poisoning under floors etc including forming and poisioning shallow furrows aaginst foundation walls tec. Filling in furrows and ramming	47	m^2		
concrete. Formwork & reinforcement 20MPa/19mm reinforced concrete in channels.apron laid in	6	m^3		
making and testing 150x150x150mm concrete strength cube	1	Set		
Finsihing top surfaces of concrete smooth with a wood float	47	m^2		
10mm isolation joints not exceeding 300mm high including "Dow corning" or equally approved silicone sealant between vertical concrete and brick surfaces	24	m		
Smooth formwork to edges, risers, ends and reveals not exceeding 300mm high or wide	64	m		
ref 193 fabric reinforcement in concrete surface bed, slabs etc.	47	m^2		
open layer 250 micron "Consol Plastics Gunplas USB green or equally and approved" waterproof sheeting sealed at laps with "Gunplas Pressure Sensitive Tape or equally and approved" under concrete apron	47	m^2		
CARRIED TO SUMMARY PAGE			R	

	BILL No. 12 TRENCHING AND MANHOLES	QTY	UNIT	RATE	TOTAL
a)	Supply 160 dia. PVC 3 mm thick walled sleeves	30	m		
b)	Extra on last to install in trench at 1000 mm below ground level	30	m		
c)	Excavate 1 000 mm deep by 600 mm wide trench in soft to medium soil	270	m³		
d)	Extra over excavations in earth for cable sleeves in hard rock	100	m³		
e)	Excavate 1000mm deep by 1000mm circular hole to accommodate precast mahole	4	No.		
f)	Supply and install precast concreet manhole 1000mm round by 1000mm deep stright through join (must accept 160mm pipe collar) with concrete lid	2	No.		
g)	Supply and install precast concreet manhole 1000mm round by 1000mm deep 90^{U} join (must accept 160mm pipe collar) with concrete lid	2	No.		
h)	Supply bedding umgeni sand as bedding material for cable with delivery to site	100	m³		
i)	Allow to sort through material dug up in the trenching and remove any sharp rocks and hard material by sieving	Item			
j)	Supply and install 11kV danger tape into trech 500mm below finished ground level	450	m		
k)	Backfilling of the trench with loose compaction with the sieved material	450	m		
l)	Excavate for main switch room earth	50	m³		
m)	Excavate for minature substation earths	3	No.		
	<u>Road crossing</u>				
n)	Allow to dig up tar to cross through existing road inclusive of barricading and traffic management	7	m		
o)	Allow to back fill and supply and install tar once sleeves and cables are installed	7	m		
p)	budgetary allowance to trench outside main incomer switch room for temporary works		Item		30 000,00
q)	Profit and attendance on the above		%		
	TOTAL FOR BILL No. 3 CARRIED TO SUMMARY			R	

	BILL No. 13 CABLING, BUSBARS AND TERMINATIONS	QTY	UNIT	RATE	TOTAL
	Main Incomer switch room (initial)				
a)	Allow to disconnect incoming cable from the municiplaity	1	No.		
b)	Supply general purpose belted cable Table 17 95mm²	10	m		
c)	Supply and install Raychem heat shrink joint kit for 95mm²	1	No.		
d)	Supply and install Raychem air termination kit for 95mm²	1	No.		
e)	Allow to disconnect cable to Substation A	1	No.		
f)	Allow to pull the cable back out of the trench and excavate outside the substation to house the slack	1	No.		
g)	Supply and install Raychem air termination kit for 70mm²	1	No.		
h)	Allow to disconnect cable to outdoor RMU	1	No.		
i)	Supply general purpose belted cable Table 17 70mm²	10	m		
j)	Supply and install Raychem heat shrink joint kit for 70mm²	1	No.		
k)	Supply and install Raychem air termination kit for 70mm²	1	No.		
	Substation A				
l)	Supply general purpose belted cable Table 17 70mm²	15	m		
m)	Disconnect incoming and outgoing cables	2	No.		
n)	Disconnect both sides of the cable to the transformer and set aside	1	No.		
o)	Install new cable between transformer and RMU	10	m		
p)	Terminate cable at RMU using Raychem RSTI screened connectors	1	No.		
q)	Terminate cable at transformer using Raychem air termination kit	1	No.		
r)	Allow to trench outside the substation to free up cable slack	1	No.		
s)	Supply and install Raychem heat shrink joint kit for 70mm²	1	No.		
t)	Install new cable to extend one leg	5	m		
u)	Terminate cable at RMU using Raychem RSTI screened connectors	2	No.		
	CARRIED TO COLLECTION PAGE			R	

	BILL No. 13 CABLING, BUSBARS AND TERMINATIONS	QTY	UNIT	RATE	TOTAL
	Outdoor RMU				
a)	Allow to trench around the RMU unit to free up any cable slack available	1	No.		
b)	Supply general purpose belted cable Table 17 70mm²	110	m		
c)	Install cable in ground (trenching catered for elsewhere)	110	m		
d)	Disconnect all existing cables from RMU	3	No.		
e)	Supply and install Raychem heat shrink joint kit for 70mm² and connect cables as per 21063_402_A	1	No.		
	Miniature Substation C				
f)	Supply general purpose belted cable Table 17 70mm²	450	m		
g)	Install cable in ground (Trenching covered elsewhere)	450	m		
h)	Terminate cable at RMU using Raychem RSTI screened connectors	2	No.		
	Miniature Substation D				
i)	Supply general purpose belted cable Table 17 70mm²	5	m		
j)	Install cable in ground (Trenching covered elsewhere)	5	m		
k)	Supply and install Raychem heat shrink joint kit for 70mm²	1	No.		
l)	Terminate cable at RMU using Raychem RSTI screened connectors	2	No.		
	Miniature Substation E				
m)	Supply general purpose belted cable Table 17 70mm²	5	m		
n)	Install cable in ground (Trenching covered elsewhere)	5	m		
o)	Supply and install Raychem heat shrink joint kit for 70mm²	1	No.		
p)	Terminate cable at RMU using Raychem RSTI screened connectors	2	No.		
	CARRIED TO COLLECTION PAGE			R	

	BILL No. 13 CABLING, BUSBARS AND TERMINATIONS	QTY	UNIT	RATE	TOTAL
	Main Incomer switch room (Final)				
a)	Allow to disconnect incoming cable from the municiplaity	1	No.		
b)	Pull back existing cable into trench	10	m		
c)	Supply and install Raychem air termination kit for 95mm² and connect to incomer circuit breaker	1	No.		
d)	Allow to disconnect cable to Substation A	1	No.		
e)	Pull back existing cable into trench	10	m		
f)	Supply and install Raychem air termination kit for 70mm² and connect to outgoing circuit breaker	1	No.		
g)	Allow to disconnect cable to Substation D	1	No.		
h)	Pull back existing cable into trench	10	m		
i)	Supply and install Raychem air termination kit for 70mm² and connect to outgoing circuit breaker	1	No.		
	LV CABLING				
	Supply and install the following 400/1 000 Volt Cu PVC SWA PVC SWA ECC cables on cable ladder and within sleeves				
j)	150 mm² 4 core	15	m		
k)	120 mm² 4 core	15	m		
l)	95 mm² 4 core	50	m		
m)	70 mm² 4 core	100	m		
n)	50mm² 4 core	100	m		
o)	35 mm² 4 core	100	m		
p)	Budgetary allowance for additional cabling	Item			50 000,00
q)	Profit and attendance on the above		%		
	CARRIED TO COLLECTION PAGE			R	

	BILL No. 13 CABLING, BUSBARS AND TERMINATIONS	QTY	UNIT	RATE	TOTAL
	Extra on last to terminate in distribution boards inclusive of cutting hole in 2 mm thick gland plate, coldgalvanising cut edge, supplying and installing cablegland, supplying and installing cable lugs and connectingto busbar stubs:-				
a)	185 mm² 4 core	2	No.		
b)	150 mm² 4 core	4	No.		
c)	120 mm² 4 core	4	No.		
d)	95 mm² 4 core	4	No.		
e)	70 mm² 4 core	8	No.		
f)	50 mm² 4 core	20	No.		
g)	35 mm² 4 core	20	No.		
h)	25 mm² 4 core	20	No.		
i)	16 mm² 4 core	20	No.		
j)	10 mm² 4 core	20	No.		
	Extra on last to joint cables				
k)	185 mm² 4 core	2	No.		
l)	150 mm² 4 core	6	No.		
m)	120 mm² 4 core	6	No.		
n)	95 mm² 4 core	14	No.		
o)	70 mm² 4 core	10	No.		
p)	50 mm² 4 core	12	No.		
q)	35 mm² 4 core	18	No.		
r)	25 mm² 4 core	12	No.		
s)	16 mm² 4 core	22	No.		
t)	10 mm² 4 core	24	No.		
	CARRIED TO COLLECTION PAGE			R	

COLLECTION PAGE for BILL No. 13

TOTAL from PAGE No. 152	R
TOTAL from PAGE No. 153	R
TOTAL from PAGE No. 154	R
TOTAL from PAGE No. 155	R

TOTAL FOR BILL No. 4 CARRIED TO SUMMARY R

	BILL No. 14 MV SWITCHGEAR AND MINISUBS	QTY	UNIT	RATE	TOTAL
	MAIN SWITCHROOM (day work)				
a)	Supply 11 kV 20 kA 630A incomer circuit breaker as specified in 21063_605_A or equal and approved	1	No.		
b)	Supply 11 kV 20 kA 630A ring feeder breakers as specified in 21063_605_A or equal and approved	2	No.		
c)	Extra on last to deliver complete 3 panel switchboard to site off loaded outside the relevant substation	1	No.		
d)	Extra on last for panel manufacturer to move 3 panel switchboard from outside substation into position inclusive of providing necessary temporary rigging facilities	1	No.		
e)	Panel manufacturer to install complete 3 panel switchboard in substation inclusive of levelling,final alignment, interconnecting busbars,control wiring etc.	1	No.		
f)	Extra on last for panel manufacturer to perform cold commissioning of the complete 3 panel board as specified	1	No.		
g)	Apply finished protection settings and perform hot commissioning tests to complete 3 panel board as specified	1	No.		
h)	Budgetary allaowance to wire communications out from relays	Item			10 000,00
i)	Profit and attendance on the above	%			
j)	Supply and install Battery tripping unit as specified in 21063_607_A	1	No.		
k)	Extra on last to fix to brick wall	1	No.		
l)	Extra on last to connect to 230 Volt power supply (cord grip double pole isolator provided within 3 metres of BTU)	1	No.		
m)	Extra on last to connect 30 Volt to switchboard with 4 mm² 2 core Cu PVC PVC cable	1	No.		
	Substation A (night work only for all installation)				
n)	Supply ring main unit as per 21063_604_A	1	No.		
o)	Supply hot dip galvanised base to span the trench	1	No.		
p)	Decommission existing ring main unit and set aside	1	No.		
q)	Install new ring main unit inclusive of rigging	1	No.		
	CARRIED TO COLLECTION PAGE			R	

	BILL No. 14 MV SWITCHGEAR AND MINISUBS	QTY	UNIT	RATE	TOTAL
a)	Supply transformer as per 21063_606_A	1	No.		
b)	Supply tico pads/rubber with a shore hardness of >90	15	m		
c)	Decommission old transformer and set aside inclusive of rigging	1	No.		
d)	Install tico pads	15	m		
e)	Install new transfromer inclusive if rigging	1	No.		
f)	Budgetary allowance to provide oil disposal report for client records	Item			10 000,00
g)	Markup and attendance on the above item (please show the percentage value but include the rand value in the total column)		%		
h)	Allow to credit the project for the existing transformer that has been removed (amount to be stated and shown as a negative value)	Item			
	<u>Miniature Substation C (all installation work to priced for night work)</u>				
i)	Supply miniature substation as per 21063_601_A	1	No.		
j)	Supply concrete plinth for above miniature substation	1	No.		
k)	Decommission existing miniature substation and set aside inclusive of rigging	1	No.		
l)	Install new miniature substation inclusve of rigging	1	No.		
m)	Allow to remove old miniature substation off site and scrap	1	No.		
	<u>Miniature Substation D (all installation work to priced for night work)</u>				
n)	Supply miniature substation as per 21063_602_A	1	No.		
o)	Supply concrete plinth for above miniature substation	1	No.		
p)	Decommission existing miniature substation and set aside inclusive of rigging	1	No.		
q	Install new miniature substation inclusve of rigging	1	No.		
r)	Allow to remove old miniature substation off site and scrap	1	No.		
	CARRIED TO COLLECTION PAGE			R	

	BILL No. 14 MV SWITCHGEAR AND MINISUBS	QTY	UNIT	RATE	TOTAL
	Miniature Substation E (day work)				
a)	Supply miniature substation as per 21063_603_A	1	No.		
b)	Supply concrete plinth for above miniature substation	1	No.		
c)	Install new miniature substation inclusve of rigging	1	No.		
d)	Allow to remove old miniature substation off site and scrap	1	No.		
	Temporary works				
e)	Supply a concrete base suitable for ring main unit from Substation A with holes to fascilitate bottom enrty for cables	1	No.		
f)	Allow to install ring main unit onto concrete base including rigging next to main incoming switchroom	1	No.		
	Old Outdoor RMU				
g)	Allow to disconnect and set aside including rigging	1	No.		
h)	Allow to to remove from site and obtain a disposal certificate for the oil within the RMU	1	No.		
	Miniature substations				
i)	Allow to to remove from site and obtain a disposal certificate for the oil within the RMU	2	No.		
	Old withdrawable switchgear and BTU				
j)	Allow to remove old switchgear from the site and dispose of via approved channels with scrapping certificate provided	1	No.		
k)	Allow to remove battery charger from the site and dispose of via approved channels with scrapping certificate provided	1	No.		
	CARRIED TO COLLECTION PAGE			R	

COLLECTION PAGE for BILL No. 14

TOTAL from PAGE No. 157	R
TOTAL from PAGE No. 158	R
TOTAL from PAGE No. 159	R
TOTAL FOR BILL No. 5 CARRIED TO SUMMARY	R

BILL No. 15 LOAD BALANCING	QTY	UNIT	RATE	TOTAL
Miniature Substation B				
a) Allow to install a load logger on the main 1250A circuit breaker for a period of 1 week	1	No.		
b) Allow to install a load logger on the mortuary feed for the same week as the main incomer	1	No.		
c) Allow to install a load logger on the kitchen feed for the same week as the main incomer	1	No.		
d) Allow to download all the load loggers and produce a report including the overlay of all 3 sets of data	1	No.		
e) Allow to interface with the mortuary and kitchen supervisors to arrange shuts to change phasing inside the varoius dbs	1	No.		
f) Examine each db within the kitchen block area and allow to balance across the various dbs	4	No.		
g) Examine each db within the mortuary block area and allow to balance across the various dbs	4	No.		
h) Allow to install a load logger on main 1250A breaker post balancing for a period of 3 weeks	1	No.		
i) Allow to produce a report including load graphs with voltage and current harmonics present inclusive of sending the report to the engineer	1	No.		
TOTAL FOR BILL No. 6 CARRIED TO SUMMARY			R	

	BILL No. 16 SMALL POWER AND LIGHTING	QTY	UNIT	RATE	TOTAL
	LIGHTING				
a)	Supply and install 25mm bosal conduit fixed to surface to concrete/ brickwork	160	m		
b)	Supply and install 65mm round bosal box with 25mm conduit entry	15	No.		
c)	Supply and install 2.5mm PVC insulated copper wire in bosal	1100	m		
d)	Supply and install 4mm PVC insulated copper wire in bosal	200	m		
e)	Supply 24W 580mm Nasa light fitting	12	No.		
f)	Install luminaire	12	No.		
g)	Supply P1000 with plastic covers	200	m		
h)	Install P1000 fixed directly to brickwork/concrete	150	m		
i)	Install P1000 suspended using trapese hangers	50	m		
j)	Supply P8000 with plastic covers	15	m		
k)	Install P8000 flush against brickwork/ concrete	15	m		
	SMALL POWER				
l)	Supply db as per 21063_403_A	1	No.		
m)	Install db into switchroom	1	No.		
n)	Supply and install wall mounted 4x4 plug socket	2	No.		
o)	Supply and install 20A levarto 230V isolator	2	No.		
p)	Supply and install Zintec 1.6mm steel plate to cover the the db recess	1	No.		
	STRIP OUT				
q)	Disconnect and remove existing db including removing the cable from the current VT	1	No.		
r)	Disconnect and remove light fittings	2	No.		
s)	Disconnect and remove plug sockets	2	No.		
t)	Disconnect and remove all old wiring from switch room	Item			
	TOTAL FOR BILL No. 16 CARRIED TO SUMMARY			R	

	BILL No. 17 EARTHING	QTY	UNIT	RATE	TOTAL
	MV RING EARTH				
	Supply and install 120 mm² Cu PVC (black) earth wire in continuous lengths as follows:-				
a)	Miniature Substation C to Miniature Substation D	450	m		
b)	Extra on last to terminate complete with lug	2	No.		
c)	Extra on last to supply and install 100 mm green heat shrink over end of each black PVC earth wire	2	No.		
	Main Incomer				
	Supply and install the following Cu pvc earth wire:-				
d)	120 mm²	5	m		
e)	95 mm²	150	m		
f)	70 mm²	26	m		
g)	Extra on last to terminate complete with lug	18	No.		
	The following is to be carried out by a specialist earthing contractor:-				
h)	Supply 1.8 m earth rod	60	No.		
i)	Extra on last to install spaced a minimum of 1 metre apart	60	No.		
j)	Interconnect earth spikes with 95 mm bare Cu wire (allow 1.5m)	120	No.		
k)	Supply and install MV earth bar as specified fixed to brick wall complete with insulators and removable link	1	No.		
	Substation A				
	The following is to be carried out by a specialist earthing contractor:-				
l)	Supply 1.8 m earth rod	30	No.		
m)	Extra on last to install spaced a minimum of 1 metre apart	30	No.		
n)	Interconnect earth spikes with 95 mm bare Cu wire (allow 1.5m)	60	No.		
o)	Supply and install MV earth bar as specified fixed to brick wall complete with insulators and removable link	1	No.		
	CARRIED TO COLLECTION PAGE			R	

	BILL No. 17 EARTHING	QTY	UNIT	RATE	TOTAL
	Miniature Substation C				
	The following is to be carried out by a specialist earthing contractor:-				
a)	Supply 1.8 m earth rod	8	No.		
b)	Extra on last to install spaced a minimum of 1 metre apart	8	No.		
c)	Interconnect earth spikes with 95 mm bare Cu wire (allow 1.5m)	12	No.		
	Miniature Substation D				
	The following is to be carried out by a specialist earthing contractor:-				
d)	Supply 1.8 m earth rod	8	No.		
e)	Extra on last to install spaced a minimum of 1 metre apart	8	No.		
f)	Interconnect earth spikes with 95 mm bare Cu wire (allow 1.5m)	12	No.		
	Miniature Substation E				
	The following is to be carried out by a specialist earthing contractor:-				
g)	Supply 1.8 m earth rod	8	No.		
h)	Extra on last to install spaced a minimum of 1 metre apart	8	No.		
i)	Interconnect earth spikes with 95 mm bare Cu wire (allow 1.5m)	12	No.		
j)	Testing of MV substation earths to ensure that resistance is less than 1 ohm	6	No.		
k)	Supply the engineer with earthing cetificates	5	No.		
	CARRIED TO COLLECTION PAGE			R	

COLLECTION PAGE for BILL No. 17

TOTAL from PAGE No. 163	R
TOTAL from PAGE No. 164	R
TOTAL FOR BILL No. 17 CARRIED TO SUMMARY	R

SUMMARY OF BILLS OF QUANTITIES

BILL NO. 2 - GENERAL ITEMS	R
BILL NO. 3 - REMOVAL OF EXISTING WORKS	R
BILL NO 4 - CONCRETE, FORMWORK AND REINFORCEMENT	R
BILL NO 5 - WATERPROOFING	R
BILL NO 6 - ROOF COVERINGS	R
BILL NO 7 - CARPENTRY AND JOINERY	R
BILL NO 8 - IRONMONGERY	R
BILL NO. 9 - PLASTERING, PLUMBING AND GLAZING	R
BILL NO 10 - PAINTWORK	R
BILL NO 11 - EXTERNAL WORKS	R
BILL NO. 12 - TRENCHING AND MANHOLES	R
BILL NO. 13 - CABLING BUSBARS AND TERMINATIONS	R
BILL NO. 14 - MV SWITCHGEAR AND MINISUBS	R
BILL NO. 15 - LOAD BALANCING	R
BILL NO. 16 - SMALL POWER AND LIGHTING	R
BILL NO. 17 - EARTHING	R

TOTAL (EXCLUDING V.A.T.) - CARRIED TO FINAL SUMMARY	R

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

PART C3. SCOPE OF WORKS

C3.1 SCOPE OF WORKS
GCC FOR CONSTRUCTION WORKS (Edition 2 of 2010)

Scope of Works complied in accordance with SANS 10403 where reference is made to this part of SANS 1921-1:2004

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender no:	**ZNTM01130W**	**Project Code:**	**073636**

SECTION 1

1 EXTENT OF THE WORKS

1.1 EMPLOYERS OBJECTIVES

To replace the 11000V medium voltage switchgear in main incomer swicth room and battery tripping unit, replacement of the miniature substation C, replacement of medium voltage switchgear in substation A and oil sampling of existing transformer with potential replacement, replacement of miniature substation D, closing of the medium voltage ring between miniature substation C and D via a new Table 17 PILC cable and the removal of the outdoor ring unit. Implementation of protection settings as determined by the specialist. Disposal of old switchgear through correct disposal channels. Load balancing at Miniature substation B. Introduction of Miniature Substation E next to the main switch room for auxiliary supply to the main switch room. The main

1.2 OVERVIEW OF THE WORKS

Replacement of 11kV switchgear in the main incomer switch room including minor civil works as required. Replacement of the battery tripping unit. Replacement of miniature substation C including the plinth. Replacement of miniature substation D including the plinth. Replacement of the ring main unit at Substation A and oil sampling of the transformer in substation A for moisture, acidity and furans. Supply and installation of pilc table 17 cable between miniature substation C and miniature substation D and the removal of the outdoor ring main unit. Implementation of protection settings as determined by the specialist. Disposal of old switchgear through correct disposal channels. Load balancing at Miniature substation B. Introduction of miniature substation E next to main switch room

1.3 EXTENT OF THE WORKS

The contract comprises the renewal of the MV switchgear and miniature substations with the Fort Napier hospital

1.4 LOCATION OF THE WORKS

The site is situated within the premises of the Fort Napier Hospital in the town of Pietermaritzburg. GPS Co-ordinates for the site is -29.364599, 30.221066

1.5 TEMPORARY WORKS

All temporary work to comply with the Occupational Health and safety Act (Act 85 of 1993)

2 ENGINEERING

2.1 EMPLOYER'S DESIGN

Not applicable

2.2 DESIGN BRIEF

Not applicable

2.3 DRAWINGS

See list of drawings/Annexure's attached to this document.

2.4 DESIGN PROCEDURES

Not applicable

3 PROCUREMENT

3.1 PREFERENTIAL PROCUREMENT PROCEDURES

This tender will be subject to the implementation of the Preferential Procurement Regulations, 2022, pertaining to the Preferential Procurement Policy Framework Act, Act Number 5 of 2000 and the relevant Supply Chain Management Legislation and the KwaZulu-Natal Supply Chain Management Policy Framework published by the KwaZulu-Natal Provincial Treasury. Tenderers are referred to www.kzntreasury.gov.za for access to the relevant documents.
Tenderers are advised to familiarize themselves with the contents of the KwaZulu-Natal Supply Chain Management Policy Framework regarding Preference Point Systems, evaluation of tenders appeals and other matters.

3.2 RESOURCE STANDARD PERTAINING TO TARGETED PROCUREMENT

NOTE : This project will be adjudicated as not exceeding R 50,000 000,00

3.3 SCOPE OF MANDATORY SUBCONTRACT WORK

Not applicable

3.4 PREFERRED SUBCONTRACTORS/SUPPLIERS

Not applicable

3.5 SUBCONTRACTING PROCEDURES

Not applicable

4 CONSTRUCTION

4.1 APPLICABLE SANS 2001 STANDARDS FOR CONSTRUCTION WORKS

The Contractor is referred to the "Model Preambles to Trades - 2008", any "Supplementary Preambles", the Electrical Specifications and Mechanical Specification for full descriptions of materials and methods referred to in these Bills of Quantities/Lump Sum documents, insofar as they apply. The Contractor is advised to study the "Standard Preambles to all Trades", any "Supplementary Preambles", the Electrical Specifications and Mechanical Specification, before pricing Bills of Quantities/Lump Sum documents. □

Where the description in the Bills of Quantities/Lump Sum documents differ from those in the Standard Electrical Specifications, the descriptions in the Bills of Quantities/Lump Sum documents are to apply. No claim whatsoever will be allowed in respect of errors in pricing due to brevity of description of items in the Bills of Quantities/Lump Sum documents which are fully described when read in conjunction with the relevant Preambles and/or Specifications. Suppliers of materials and the like, whose quality systems apply with one or more of the SABS/SANS ISO 9000 Series should be used whenever possible in the absence of a particular SABS/SANS Specification Standard Mark.

Wherever the words "shall be deemed to be included in the description", "shall be stated" or other words having the same effect, appear in the Standard System, it shall be deemed that all descriptions in these Bills of Quantities/Lump Sum documents incorporated such inclusions and statements whether specifically stated or not.

The Contractor is hereby informed that where SABS/SANS Specifications are referred to in these Bills of Quantities/Lump Sums documents and Specifications thereto, then ONLY the Specification of Work Clauses will apply. The method of measurement and payment clauses will NOT apply to this Contract.

The Contractor is hereby informed that risk of collapse and keeping excavations free from water (excluding subterranean water) generally are deemed to be included in the descriptions unless accommodated in the system of measurement. Please refer to the Geotechnical Investigation report when included at the end of these tender documents.
Whenever reference is made to "Sub-Contractor", "Nominated Sub-Contractor" or the like in the specifications included or referred to in these Bills of Quantities/Lump Sums documents, it shall be deemed to mean "Contractor" as defined.

4.2 APPLICABLE NATIONAL AND INTERNATIONAL STANDARDS

See above 4.1

4.3 PARTICULAR / GENERIC SPECIFICATIONS

The Contractor is referred to the following documents whether attached to this document or not:

SPECIFICATION	PAGES
Specification for HIV/AIDS Awareness (CIDB)	HIV1 TO HIV3
Specific Construction, Safety, Health and Environmental Plan	
Standard Preambles for all Trades (Rev 3) - DOH 2009	1 to 95
General Electrical Specification	E/1 to E/20
Lightning Protection Installation	LP/1 to LP/6

4.4 CERTIFICATION BY RECOGNIZED BODIES

Only contractors registered with the Electrical Contracting Board of South Africa in accordance with the Regulations of the Occupational Health and Safety Act will be accepted and permitted to do work under this contract.

4.5 AGRÉMENT CERTIFICATES

Not applicable

4.6 PLANT AND MATERIAL PROVIDED BY THE EMPLOYER

Not applicable

4.7 SERVICES AND FACILITIES PROVIDED BY THE EMPLOYER

Not applicable

4.8 OTHER SERVICES AND FACILITIES

The Contractor shall provide any artificial lighting which may be necessary or required for the proper execution of the works, and provide electric power and water required by all Sub-Contractors, Nominated Sub-Contractors and Sub-Contractors appointed directly by the Administration.
The Contractor shall give all notices and pay all fees in connection with temporary electrical and water connections and shall connect temporary Electrical and Water meters for and pay for all current and water consumed.
The Contractor is advised that the permanent light fittings and water points of any kind installed in the Works are not to be used to provide temporary lighting and supplement water requirements for construction purposes.

5 MANAGEMENT

5.1 APPLICABLE SANS 1921 STANDARDS

Tenderers are referred to
SECTION 2 : SPECIFICATION DATA ASSOCIATED WITH SANS 1921-1:2004 IN THIS DOCUMENT

5.2 RECORDING OF WEATHER

The Contractor shall keep record of abnormal climatic conditions to facilitate the adjudication of claims for extension of the contract period.

The Contractor shall allow in his programme for the following number of days for rain days (rain > 10mm per day) as per the table below:

CURRENT YEAR			YEAR + 1	YEAR + 2
January	*w/days*		3	3
February	*w/days*		3	3
March	*w/days*		3	3
April	*w/days*		3	3
May	*w/days*		3	3
June	*w/days*		3	3
July	*w/days*		3	
August	*w/days*		3	
September	*w/days*		3	
October	*w/days*		3	
November	*w/days*		3	
December	*w/days*	3	3	

5.3 MANAGEMENT MEETINGS

In order to facilitate the smooth functioning of the Works and to ensure the closest co-operation between all the parties concerned, the Employer will call for regular meetings to be held on the site, at which a senior member of the Contracting firm and the General Foreman of the Works will always be required to be present.
In addition to the above, other persons will be required to attend these meetings as and when their presence is necessary, e.g., Consultants in all disciplines, representatives of the various Sub-Contractors, etc.
Proper minutes of these meetings will be kept by the Employer\Principal Agent and copies will be circulated to all persons attending the meetings and to others who need to be kept informed.

5.4 FORMS FOR CONTRACT ADMINISTRATION

The Employer shall provide all necessary forms.

5.5 ELECTRONIC PAYMENTS

The Contractor shall provide all required information to the Employer to facilitate electronic payments upon request.

5.6 DAILY RECORDS

The Contractor shall keep daily records of people and equipment employed as well as a site diary in respect of work performed on the site.
At the end of each week the Contractor shall provide the Principal Agent with a written record, in schedule form, reflecting the number and description of tradesmen and labourers employed by him and all Sub-Contractors on the works each day.
At the end of each week the Contractor shall provide the Principal Agent with a written record, in schedule form, reflecting the number, type and capacity of all plant, excluding hand tools, currently used on the works.

5.7 BONDS AND GUARANTEES

The Contractor shall within 10 calendar days after receiving notice from the Engineer and prior to 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.

5.8 PAYMENT CERTIFICATES

Requirements will be in accordance with the Employers prescriptions.

5.9	**PERMITS** The Contractor is advised that, in the case of an existing building or institution, all security measures in force will remain in operation and he must acquaint himself and his Employees with them as he and his Employees will at all times be subject to these measures. The Contractor will on no account extend his operations beyond the confines of the building site as indicated by the Employer and must ensure that all his Employees are made aware of these limits. Any Employee disregarding this instruction and found outside the limit of the building site without authority, shall be redeployed immediately and shall not again be employed on this Contract. The Contractor will be responsible for ensuring that this instruction is strictly enforced and must provide and remove upon completion or when directed, such other necessary temporary barriers, fences, etc., as may be required and is to allow opposite this item for any charges he may wish to make in this connection. The Employer will accept no responsibility whatsoever for damage to or the loss of plant, materials, etc., from the site.
5.10	**PROOF OF COMPLIANCE WITH THE LAW** The following certificates must be provided before first delivery is taken: - HIV/STI Report (Bound into this document) - Electrical Compliance Certificate - Plumbing Compliance Certificate - Lightning Certificate - Soil Protection Certificate - Concrete test and cube certificates - Waterproofing Guarantee certificates - TR1 and TR2 prefabricated roof truss certificates - Soil compaction certificates - Electrical and Mechanical test certificates - Plumbing and drainage pressure test certificates - Fire Compliance Certificate - Entomology Certificate - SANS 10400-A:2010 compliance certificates - Latest National Building Regulation
5.11	**INSURANCE PROVIDED BY THE EMPLOYER** Not Applicable
	SECTION 2 **SPECIFICATION DATA ASSOCIATED WITH SANS 1921-2004**
Clause Numbers	
4.1.7	**The requirements for drawings, information and calculations for which the Contractor is responsible are:**
	Prefabricated roof trusses design must be submitted for approval 30 days prior to erections.
4.2.1	**The responsibility strategy assigned to the Contractor for the works is:**
	Strategy A
4.2.2	**The structural engineer is:**
	MAP Africa Engineers
4.2.3	**Drawings & other info are to be submitted in accordance with the contractors programme**
	N/A
4.3	**The planning, programme and method statement are to comply with the following:**
	N/A

4.12.1	**Samples of materials**
	The work is to be executed with materials of the best specified and in the most substantial and workmanlike manner under the inspection of the Employer and to his satisfaction. The Contractor shall furnish, without delay, such samples as called for or may be called for by the Employer, who may reject all materials or workmanship not corresponding with the approved sample. The samples of materials, workmanship and finishes that the Contractor is to provide and deliver to the employer are: - Self Levelling screed mix - Light fitting sample. - Screed panel 2m x 2m impact test. - Tested trial mix to be approved by the Engineer.
4.12.2	**Fabrication drawings that the contractor is to provide to the employer are:**
	Main Switch room panel , Battery tripping unit , Miniature substations, ring main unit and ring main unit kiosk
4.12.3	**Office accommodation, equipment, accommodation for site meetings and other facilities for use by the employer and his agents are:**
	OFFICE FOR FOREMAN
	Provide, erect, maintain and remove at completion a suitable temporary office for the Contractor or his Foreman, perfectly secured, lighted and ventilated and having a desk with drawers.
	TELEPHONE
	The Contractor shall provide a telephone on the site for the use of the Contractor and all Sub-Contractors for the duration of the Contract, and must make the necessary application for connection, give all notices and pay all fees, rentals and charges for the service and also for all calls.
	OFFICE FOR INSPECTOR OF WORKS
	Provide, erect, maintain and remove at completion a well constructed temporary office for the Inspector of Works not less than 4 x 3 m on plan and 3 m high to eaves to the approval of the Employer. The office shall be constructed of wood framing covered externally with corrugated iron and with a lean-to roof covered with the same material as the external wall covering. The office shall be lined internally with soft board or other approved material and a ceiling shall be provided of the same material as the internal lining. A suspended wood floor shall be provided and is to finish not less than 300 mm above the ground level. A lockable door and a window, which provides adequate light and ventilation, shall be fitted. An office constructed of 115 mm thick brick-work and provided with a screeded concrete floor and roofed and ceiled as above described may be accepted as an alterative but prior permission of the Employer will be necessary before construction of such an office is commenced and his requirements shall be stated and fulfilled by the Contractor. The office shall be fitted in an approved manner with a sloping topped desk of height and length suitable for the laying out and studying of drawings, a desk or table with not less than two lock-up drawers, shelves, seating and wash-stand, and the Contractor shall provide all necessary attendance.
	TELEPHONE IN OFFICE FOR INSPECTOR OF WORKS
	The Contractor shall arrange for the installation of a lockable telephone in the Office for the Inspector of Works for the duration of the Contract. The Contractor will be required to make the necessary application for connection and give all notices on behalf of the Employer. The Employer will, however, be responsible for the direct payment of all fees, rentals and other charges by Telkom for the service for the Inspector of Works and for all calls made from this telephone.

	SHED
	Provide, erect, maintain and remove at completion, ample temporary sheds for the proper storage of materials and for the use of the workmen, and remove when no longer required.
4.14.6	**The requirement for provision and erection of signboards are:**
	Supply, erect, maintain and remove at completion a painted notice board, size overall 2800 x 2345 mm high sign written to detail as Drawing No. T9506 which drawing is available from offices of the Department of Public Works. Only the official notice board is to be displayed on the site and no Sub-Contractor's boards will be permitted. The Contractor, at his own cost, may provide a board on which all sub-contract firms' names may be sign written. The notice board is to be to the approval of the Employer and is to be maintained in first class condition and placed where directed at the entrance to the site and remain there for the duration of the Contract.
4.17.1	**Requirement for the termination, diversion or maintenance of existing services:**
	Should the Contractor come in contact with any underground cables or pipes during excavations, immediate notification must be made to the Employer and all work in the vicinity of such cables, pipes, etc., shall cease until authority to proceed has been obtained from the Employer. Should the Contractor damage underground cables or pipes resulting in a disruption of services to an existing institution such damage shall be repaired immediately.
4.17.3	**Services which are known to exist on the site:**
	Investigate and provide detail drawings.
4.17.4	**Requirement for detection apparatus**
	None
4.18	**ADDITIONAL HEALTH AND SAFETY REQUIREMENTS ARE:**
	By the submission of a tender, any Tendered will, if awarded the contract to which this tender document relates, be deemed to be the mandatory as envisaged by Section 37 (2) of the Act. As a mandatory the successful Tendered will be deemed to be the “principal contractor” and an employer in his/her/their own right with duties as prescribed in the Act and accordingly will be deemed to have agreed to be solely responsible for ensuring that in connection with the service to which this tender document relates, all work will be performed and machinery and plant used in accordance with the Act. Should the Contractor, for whatever reason be unable to perform as required by the Act, the Contractor undertakes to inform the Employer accordingly. Tenderers are advised that it is a Condition of this Tender that a 'Construction Phase Safety, Health and Environmental Plan' specifically relates to the project for which tenders are being submitted and must be prepared by the Tendered and submitted with the other tender documents at the time of tender. Failure to do so Tenderers are therefore advised to study the 'Construction Safety, Health and Environmental Specification' which is issued as part of this tender document, the Model Preambles to Trades - 2008, any project Specification included in this tender document and any and all drawings which are referred to and issued as part of this tender document before preparing their own project specific 'Construction Phase Safety, Health and Environmental Plan' . Tenderers are also advised that such a plan which is submitted with a tender but is incomplete or considered inadequate by the Employer or his Representative will invalidate the tender. The Contractor will be deemed to have satisfied himself with his obligations in terms of the Act and to have allowed for all costs arising from compliance with the Act as no claim for extra costs arising from compliance with, and obligations in terms of the Act will be entertained.
4.22	**WORK BY NOMINATED AND SELECTED SUBCONTRACTORS COMPRISE:**
	[Provide list of applicable contractors]

C3.2 - SPECIFICATION FOR HIV/AIDS AWARENESS

1 Scope

This generic specification contains requirements applicable to the reduction of the risk of transfer of the HIV virus between and among construction workers and the local community through the following four strategies:

a) raising awareness about HIV/AIDS;
b) providing construction workers with access to condoms;
c) HIV counselling, testing and referral services; and
d) Sexually Transmitted Infection diagnosis and treatment.

2 Normative references:

The following standard contains provisions that, through reference in this text, constitute provisions of this standard:

SANS 4074 ISO 4074, *Condom Rubbers*

3 Definitions and Abbreviations

3,1 Definitions

Construction Worker: all persons in the employ of the contractor or in the employ of any of the subcontractors contracted by the contractor.

Local Community: the communities local to the site which are most likely to have contact with the construction worker and, in particular, sex workers in those communities.

Service provider: the natural or juristic person recognised by the South African Department of Health as specialist in conducting Aids Awareness Programmes.

3,2 Abbreviations

STI: Sexually transmitted infection

HIV: Human Immunodeficiency Virus

AIDS: Acquired Immune Deficiency Syndrome

4 Objectives

The objectives are to:

a) reduce the risk of transfer of the HIV virus between and among construction workers and the local community;
b) raise awareness amongst construction workers and the local community of the risk of infection with the HIV virus;
c) promote early diagnosis; and
d) assist affected individuals to access care and counselling.

5 Requirements

5,1 General requirement

The contractor shall, in order to satisfy the objectives stated in 4:

a) make condoms complying with the requirements of SABS ISO 4074 available to all construction workers at readily accessible points on the site, suitably protected from the elements, for the duration of the contract;

b) either place and maintain HIV/AIDS awareness posters of size of not less than A1 in areas which are highly trafficked by construction workers, or provide construction workers with a pamphlet, in languages largely understood by construction workers, which

c) encourage voluntary HIV/STI testing;

d) provide information concerning counselling, support and care of those that are infected services; and

e) comply with the requirements of 5.2.

***The* provisions *of* 5.1 c) *and d) do not apply to* this contract.**

5,2 HIV awareness programme

5.2.1 The contractor shall:

a) engage a qualified service provider as described in the scope of works to conduct an HIV Awareness Programme which is structured to achieve the outcomes stated in 5.2.3 for contract workers as soon as a construction workers camp is established and populated or, where no such camp is established, within two weeks of the commencement of a significant portion of the works and at subsequent intervals, if any, provided for in the scope of works; and

b) arrange for, provide a suitable venue, and instruct all construction workers to attend the HIV Awareness Programme and notify the Employer's Representative of the date, time and venue whenever a session with construction workers is conducted.

Note: The National Department of Public Works maintains a list of qualified service providers.

5.2.2 The contractor shall do nothing to dissuade construction workers from attending such an HIV Awareness Programme and shall take all reasonable steps to ensure that a minimum of 90% of construction workers engaged in the works attend such a programme, when it is conducted.

5.2.3 The outcomes of the HIV Awareness Programme shall as a minimum, result in contract workers exposed to such a programme being able to:

a) communicate the existence of problems of HIV and be able to outline the consequences of transmission of HIV to or from the local community;

b) recall and communicate the mode of HIV transmission and preventative measures including the proper use of the condom.

The HIV/ Aids awareness programme described in 5.2 is to be repeated at four month intervals throughout the duration of the contract. (Four times in total, including the initial one at the start of the contract)

5,3 Reporting

5.3.1 The contractor shall prepare and attach to his claims for payment a brief report which outlines how the actions taken by the contractor in the period for which payment is claimed satisfy the requirements and a schedule which lists the names, identity numbers, trade / occupation and name of employer of all construction workers exposed to the programme (see **HIV/STI Compliance Report**).

5.3.2 The employer's representative shall certify the report and schedule described in 5.3.1 whenever a claim for payment is issued to the employer.

Note: In the event that the contractor fails to satisfy the requirements of this specification, the employer (Head: Public Works) may apply any of the sanctions provided for in the contract. Sanctions may include the application of a financial penalty of .04% of the Contract Sum.

The *HIV /Aids* awareness programme *described* in 5.2 shall in addition *be conducted* for the benefit *of* the local community on two occasions in the community centre nearest to the building site. The contractor shall be *responsible* for inviting identifiable community-based *institutions and organisations, churches, and schools to participate in the* programme.

C3.3 - HIV/STI COMPLIANCE REPORT

Pro-forma reporting format in terms of the SPECIFICATION FOR HIV/AIDS AWARENESS

Project Code:	073636		
Payment Claim number:		Period covered by payment claim:	

1. Distribution of condoms (briefly describe where and how condoms are distributed).

2. Posters / pamphlets (briefly describe where posters were placed / how pamphlets were distributed).

3. Voluntary testing (briefly describe the actions taken / information provided to promote testing).

4. Counselling, support and care (summarise information provided).

5. HIV awareness programme (briefly describe action).

6. Schedule of construction workers exposed to the HIV awareness programme.

Name	Identity number	Trade / occupation	Name of employer

I hereby declare the above to be a true reflection of actions taken to ensure compliance with the specification.

For Contractor:

Name: _____

Signature: _____

Date: _____

Employer's representative:

Name: _____

Signature: _____

Date: _____

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

PART C4. SITE INFORMATION

C4.1 SITE INFORMATION
GCC FOR CONSTRUCTION WORKS (2 Edition of 2010)

Project title:	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**		
Tender No.	**ZNTM01130W**	**Project Code:**	**073636**

C4.1 Site Information

C4.1 GENERAL

(a) Most buildings are Amafa protected except those that are being refurbished with general sandy rocky conditions prevalent on site

(b) The site is Fort Napier Hospital, 1 Devonshire Avenue. The site generally is quite accessible with the main switch room built back to back with that of the municipality which accessed off Poppy Lane. The buildings require interior address with the new roof being fitted over both the

(c) 0

C4.2 GEOTECHNICAL INVESTIGATION REPORT

(a) Not applicable

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

PART C5 - DRAWINGS / ANNEXURES

C5.1 - LIST OF DRAWINGS/ANNEXURES

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

Tender No.:	**ZNTM01130W**	**Project Code:**	**073636**

(Where drawings/annexure's are issued, document compilers must insert the following paragraph and list the applicable drawings/annexure's below.)

The following drawings/annexure's shall be issued during the Tender period to form part of the tender documentation. Where applicable, drawings/annexure's could be re-issued to the Contractor at commencement of the construction phase.

DRAWING NO	**DESCRIPTION**
21063_400	Existing Medium Voltage Single line Diagram
21063_402	Post Project Finished Medium Voltage Single line Diagram
21063_403	Small power and lighting db single line diagram
21063_500	Existing Site Plan
21063_501	Proposed Site Plan
21063_502	Existing Main Switch Room Layout
21063_503	Proposed Main Switch Room Layout
21063_504	Proposed Temporary medium voltage network single line
21063_600	Cable Schedule
21063_601	Miniature Substation C Schedule of Requirements
21063_602	Miniature Substation D Schedule of Requirements
21063_603	Miniature Substation E Schedule of Requirements
21063_604	Substation A - Ring Main unit specification
21063_605	Main incomer switch room switchgear schedule of
21063_606	Substation A - Transformer specification
21063_607	Main incomer switch room battery tripping unit schedule of
200-630_300	Proposed main Switch room layout: Structural details and
200-630_301	Proposed Substation A layout: Structural details and
	Existing Site Plan

ANNEXURES	
Annexure 1	Standard Preambles for all Trades (Rev 3) - DOH 2009
Annexure 2	General Electrical Specifications
Annexure 3	Lightning Protection Specifications
Annexure 4	Map of Tender submission location
Annexure 5	Joint Venture Agreement
Annexure 6	Health and Safety Specification
Annexure 7	Health and Safety Bill of Quantities
Annexure 8	Builders Lien Agreement
Annexure 9	Geotechnical Investigation Report (If applicable)
Annexure 10	EPWP Employment Contract
Annexure 11	Attendance Register - Infrastructure and Other projects
Annexure 12	EPWP Data Collection tool for Phase 3 system
	0

GENERAL NOTES

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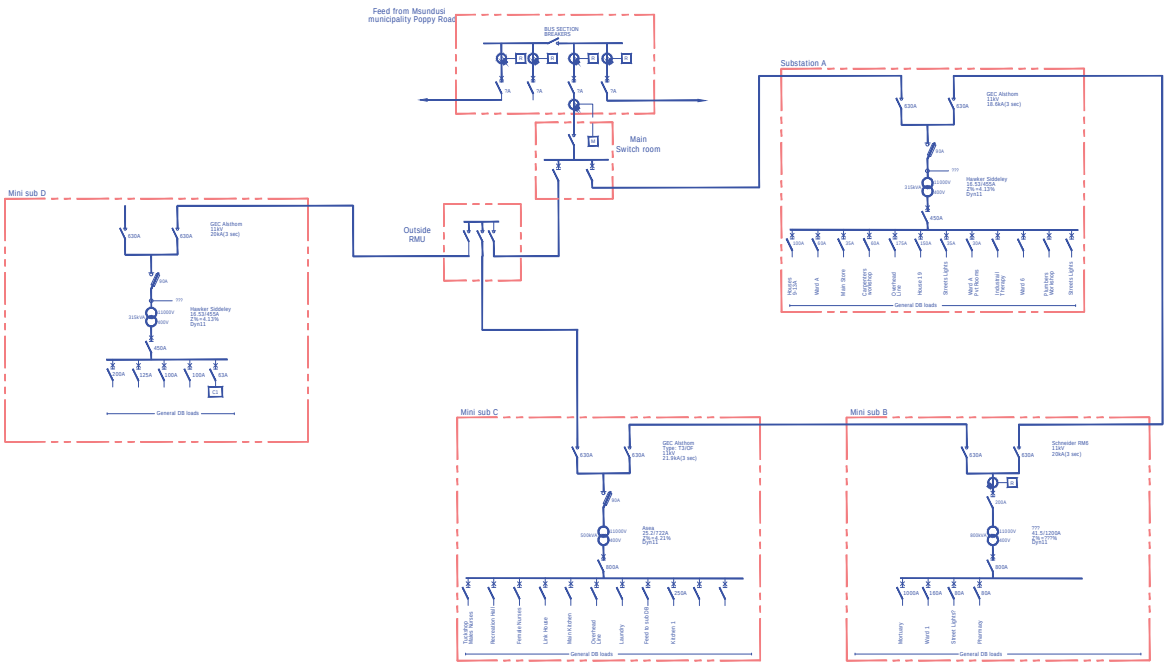

Rev no	Date	Description	Rev by
O	03/11/21	Original Issue	RM
A	30/03/22	Updated Metering split	RM
B	23/09/2024	Changed title block	RM

CLIENT DEPARTMENT SIGNATURES

FACILTY STAMP

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INFRASTRUCTURE MANAGER

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KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

uMsundusi REGION

Project

Fort Napier
Replace Main Sub MV Switchgear

Drawing description

Existing Medium Voltage Single Line Diagram

Drawn: RM Date: Sep'24

Scale/s: NTS

Consultant Drawing Number: 21063_400

DOPW Drawing Number: WIMS NO/073636/A31

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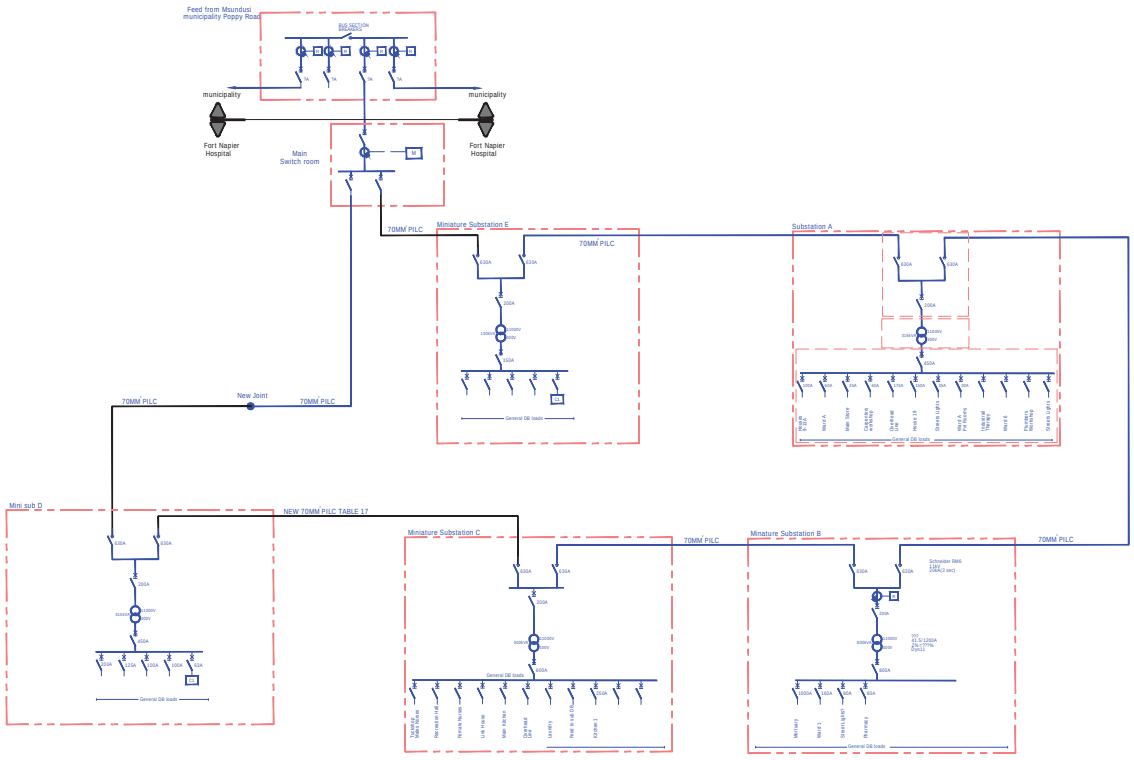

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O	03/11/21	Original Issue	RM
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B	23/09/2024	Changed title block	RM

CLIENT DEPARTMENT SIGNATURES

FACILTY STAMP	
FACILTY MANAGER	
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KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

uMsundusi REGION

Project

Fort Napier
Replace Main Sub MV
Switchgear

Drawing description

Post Project Finshed Medium Voltage
Option 2 Single Line Diagram

Drawn: RM Date: Sep'24

Scale/s: NTS

Consultant Drawing Number: 21063_402

DOPW Drawing Number: WIMS NO/073636/A33

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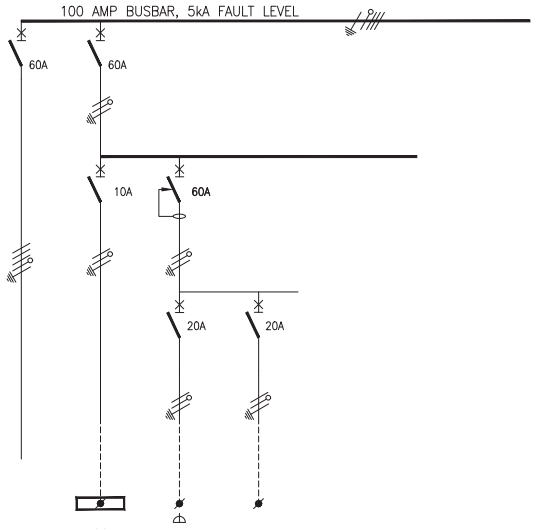
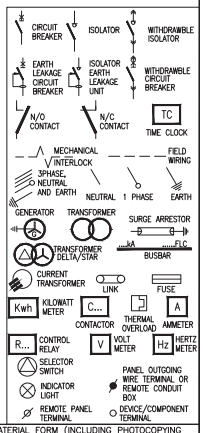


FIELD				
CIRCUIT No.		L1	P1	
PHASE				
DESIGNATION	INCOMER FROM MINISUB E LV PANEL	LIGHTING	SOCKET OUTLETS	BATTERY TRIP UNIT
WIRING	16mm² 2 CORE Cu PVC SWA PVC ECC CABLE	3x2.5mm² PVC INSULATED Cu	3x2.5mm² PVC INSULATED Cu	3x2.5mm² PVC INSULATED Cu
LOAD (AMPS)	X	X	X	X
No. OF POINTS	X	X	X	X

NOTES

1) DROPPERS/TAILS TO BE RATED FOR FULL PI LET THROUGH.
2) HARNESSED WIRING TO BE DERATED.
3) TUFFNOL BRACES ARE NOT TO BE USED ABOVE 10kA.
4) COPPER BUSBARS TO BE CONTINUOUS RATED.
5) SUFFICIENT SPACE REQUIRED FOR SAFE ACCESS FOR REWIRING.
6) EARTH AND NEUTRAL BARS TO BE EASILY ACCESIBLE.
7) ALL CIRCUIT BREAKERS TO BE FITTED WITH TERMINAL SHIELD ON LIVE AND LOAD SIDES.
8) ENCLOSURE TO BE IP54.
9) PHASING RWB, TOP TO BOTTOM, LEFT TO RIGHT, BACK TO FRONT.
10) INTERNAL TEMP TO BE LIMITED TO 5° ABOVE AMBIANT, MAX 40°C.
11) ALL CIRCUITS TO BE LABELED.
12) 25% SPARE SPACE. SPARE SPACES ARE TO BE FITTED WITH COPPER BUSBAR TAILS CONNECTED TO DROPPER BUSBARS TO ALLOW INSTALLATIONOF CIRCUIT BREAKERS WITH A MINIMAL SHUTDOWN PERIOD.
13) DB TO BE FITTED WITH A4 LEGEND CARD HOLDER WITH STANDARD IBUYA A4 LEGEND CARD.
14) EACH CIRCUIT TO BE LABELED WITH DETAILED DESCRIPTION OF CONNECTED DEVICE.
15) EXTERNAL EARTH STUD MOUNTED ADJACENT CABLE ENTRY.

INCOMING CABLE	-BOTTOM
OUTGOING CIRCUITS	-TOP/BOTTOM
COLOUR	-ORANGE
MOUNTING	-SURFACE ON WALL
ACCESS	-FRONT
PROTECTIVE DEVICES	-SCHNEIDER/CBI
MCCB'S	-COMPACT NSX
MCB's (standard loads)	-TYPE C
MCB's (HVAC loads)	-TYPE D
CONTACTOR	-AC3



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0	Original Issue	CP	21/04/22	KW

ENGINEER: JK | DRAWN: CP | DATE: 21/04/22 | SCALE: n.t.s | PAPER SIZE: A3 | CHKD.

PROJECT No.: 21063 | DRAWING No.: 403 | SHEET: 1 of 1 | REV.: 0

File Name : Lyr:

TITLE: Fort Napier Hosp Replace Main Sub MV Switchgear

DRAWING TITLE: Small Power and Lighting Distribution Board
Single Line Diagram

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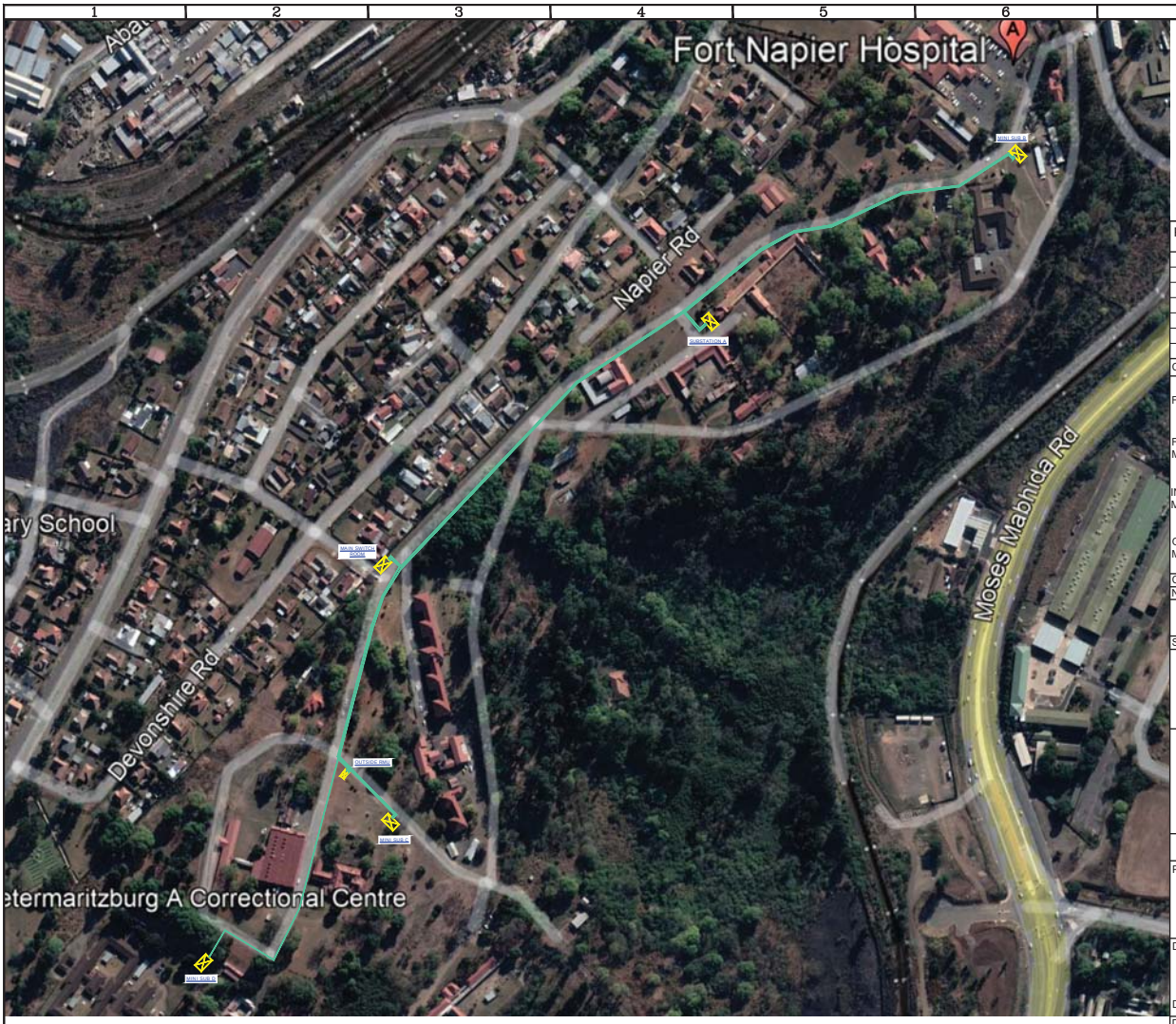

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0	30/03/22	Original Issue	RM

CLIENT DEPARTMENT SIGNATURES

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public works

Department:
Public Works
PROVINCE OF KWA-ZULU NATAL

uMsundusi REGION

Project
Fort Napier
Replace Main Sub MV
Switchgear

Drawing description
Existing Site Plan

Drawing No. 21063_500

Drawn: RM Date: Mar'22

Scale/s: NTS

GENERAL NOTES

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E) ALL WORK TO COMPLY WITH RELEVANT STANDARD CODES OF PRACTICE, SPECIFICATIONS AND REGULATIONS.

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Rev no	Date	Description	Rev by
0	30/03/22	Original Issue	JK

CLIENT DEPARTMENT SIGNATURES

FACILTY STAMP	
FACILTY MANAGER	
INFRASTRUCTURE MANAGER	
GENERAL MANAGER	

Checked by Professional Consultant

Name: J M McKelvie-King

Signature: 30/03/2022 Date

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public works

Department:
Public Works
PROVINCE OF KWA-ZULU NATAL

uMsundusi REGION

Project: Fort Napier
Replace Main Sub MV
Switchgear

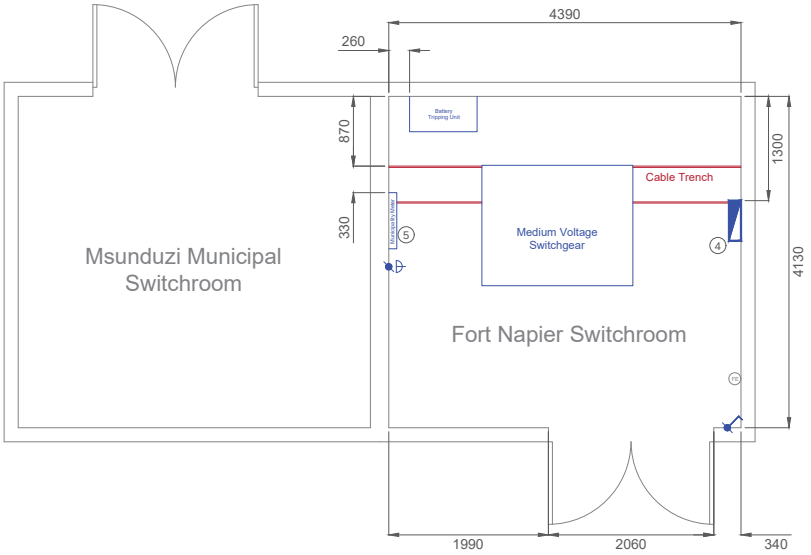
Drawing description: Proposed Site Plan

Drawing No. 21063_501

Drawn: RM Date: Mar'22

Scale/s: NTS

NOT WITHSTANDING ANYTHING TO THE CONTRARY, ALL RIGHTS RESERVED. NO PART OF THIS DRAWING MAY BE REPRODUCED IN ANY MATERIAL FORM (INCLUDING PHOTOCOPYING OR STORING IN ANY MEDIUM OR BY ELECTRONIC MEANS WHETHER OR NOT TRANSIENTLY OR INCIDENTLY TO SOME OTHER USE OF THIS DRAWING) AND ALSO, THIS DRAWING MAY NOT BE USED FOR ANY PURPOSE OR REASON OTHER THAN FOR WHICH IT WAS ORIGINALLY ISSUED, WITHOUT THE WRITTEN PERMISSION OF IBUYA CONSULTING ENGINEERS.



Drawing Notes:

1. Switchroom is located immediately next to Poppy Lane gate.
2. Building height is 2.79m
3. Door Height is 2.26m
4. Access via a 2060x1900x550 ramp; 3500 from edge of the road.
5. Distribution Board is at 2280mm AFFL
6. Municipality Meter is at 1400mm AFFL

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Rev no	Date	Description	Rev by
0	03/11/21	Original Issue	RM
A	23/09/2024	Changed title block	RM

CLIENT DEPARTMENT SIGNATURES

FACILTY STAMP

FACILTY MANAGER

INFRASTRUCTURE MANAGER

GENERAL MANAGER

Checked by Professional Consultant

Name: J M McKelvie-King

Signature | Date: 23/09/2024

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KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

uMsundusi REGION

Project
Fort Napier
Replace Main Sub MV Switchgear

Drawing description
Existing Main Switch room Layout

Drawn: RM | Date: Sep'24

Scale/s: NTS

Consultant Drawing Number: 21063_502

DOPW Drawing Number: WIMS NO/073636/A34

Stamped by Plans Approval Committee

100x100 CONDUIT BOX	TELEPHONE JB.
100x100 CONDUIT BOX AT 500AFFL.	INTERCOM JB.
100x100 CONDUIT BOX AT 1400AFFL.	DATA/COMMS JB.
100x50 CONDUIT BOX	SECURITY, ETC. JB
100x50 CONDUIT BOX AT 300AFFL.	DB POSITION.
100x50 CONDUIT BOX AT 1100AFFL.	DB-1 BOARD DESIGNATION NUMBER.
ROUND CONDUIT BOX.	16AMP. SWITCHED SOCKET OUTLET (SSO).
ROUND DRAW BOX	DOUBLE 16AMP. SSO.
100x100 DRAW BOX	16AMP. SSO ON PEDESTAL.
100x50 BOX BEHIND POWER SKIRTING	3 PHASE SSO.
CONDUIT TURNED UP ("U" FOR DOWN)	13AMP. SQUARE PIN SSO.
DOWN CONDUCTOR TO EARTH OR EARTH TIE.	5A 3 PIN UNSWITCHED SOCKET OUTLET.
20ø CONDUIT.	16A CLEAN SSO WITH RED COVER PLATE, SQUARE EARTH PLUG TOP ON PEDESTAL
25ø CONDUIT.	INTERMEDIATE LIGHT SWITCH
32ø CONDUIT.	SINGLE LEVER ONE WAY LIGHT SWITCH.
50ø CONDUIT.	2-WAY LIGHT SWITCH
S SUFFIX	FLUORESCENT LUMINAIRE
U TWIN AND EARTH POWER CABLE	BULKHEAD/DOWN LIGHTER, ETC.
OC OVERHEAD CAST-IN	WALL MOUNTED LUMINAIRE.
OS OVERHEAD ON SURFACE OR LAID ON CEILING.	TWO POLE ISOLATOR.
FC FLOOR SLAB CAST-IN.	THREE POLE ISOLATOR.
POWER SKIRTING	FOUR POLE ISOLATOR.
TRUNKING	TELEPHONE POINT.
CABLE SLEEVE.	TELEPHONE POINT ON PEDESTAL.
CABLE TRAY/ LADDER	DIRECT OUTSIDE LINE TELE. POINT (CALL BOX).
3 REFERENCE TO QUANTITY i.e. 3No.	TV OUTLET.
Z REFERENCE TO A DETAIL.	DATA/COMMS OUTLET.
4 REFERENCE TO AN ELECT. NOTE i.e. NOTE 4.	PHOTOCELL

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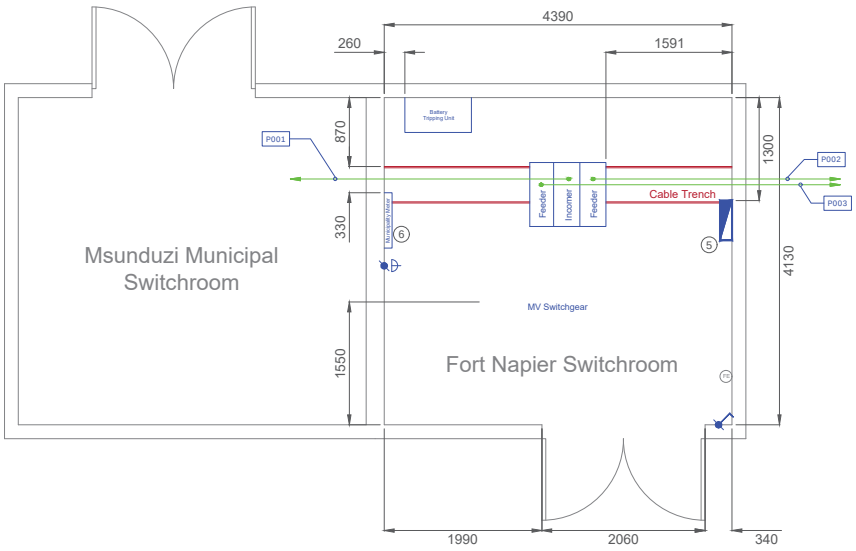

Drawing Notes:

1. Switchroom is located immediately next to Poppy Lane gate.
2. Building height is 2.79m
3. Door Height is 2.26m. Door to be replaced with a galvanised steel door.
4. Access via a 2060x1900x550 ramp; 3500 from the edge of the road. Minor repairs to be done on the ramp.
5. Distribution Board is at 2280mm AFFL.
6. Municipality Meter is at 1400mm AFFL.
7. Walls to be scraped and repainted with white paint.

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Rev no	Date	Description	Rev by
0	03/11/21	Original Issue	RM
A	23/09/2024	Changed gear	RM

CLIENT DEPARTMENT SIGNATURES

FACILTY STAMP	
FACILTY MANAGER	
INFRASTRUCTURE MANAGER	
GENERAL MANAGER	

Checked by Professional Consultant

Name: J M McKelvie-King

Signature: | Date: 23/09/2024

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KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

uMsundusi REGION

Project
Fort Napier
Replace Main Sub MV Switchgear

Drawing description
Proposed main switch room layout

Drawn: RM Date: Sep'24

Scale/s: NTS

Consultant Drawing Number: 21063_503

DOPW Drawing Number: WIMS NO/073636/A31

Stamped by Plans Approval Committee

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1 2 3 4 5 6 7 8

Drawing Notes:

1. New ring main unit designated for Substation A to be temporarily used during the replacement of the main switchroom switchgear.
2. RMU to be positioned next to the main switchroom. This is the position designated for the new 100kVA Mini-Sub.
3. RMU and cables to be in place before isolating and disconnecting the switchgear.

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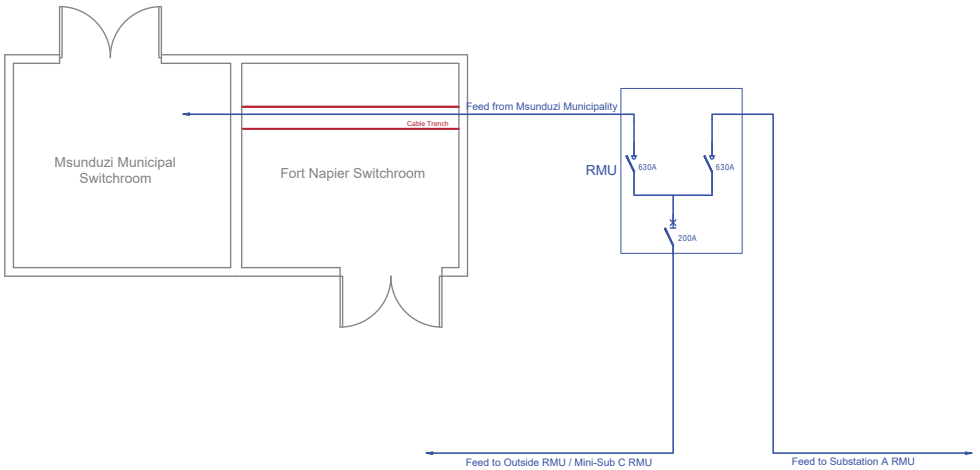

Rev no	Date	Description	Rev by
0	16/03/22	Original Issue	RM

CLIENT DEPARTMENT SIGNATURES

FACILTY STAMP

FACILTY MANAGER

INFRASTRUCTURE MANAGER

GENERAL MANAGER

Checked by Professional Consultant

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Signature | Date

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public works

Department:
Public Works
PROVINCE OF KWA-ZULU NATAL

uMsundusi REGION

Project
Fort Napier
Replace Main Sub MV
Switchgear

Drawing description
Proposed Temporary Medium Voltage
Network Single Line Diagram

Drawing No. 21063_504

Drawn: RM Date: Oct'21

Scale/s: NTS

S 100x100 CONDUIT BOX
S 100x100 CONDUIT BOX AT 500AFFL.
S 100x100 CONDUIT BOX AT 1400AFFL.
L 100x50 CONDUIT BOX
L 100x50 CONDUIT BOX AT 300AFFL.
T 100x50 CONDUIT BOX AT 1100AFFL.
ROUND CONDUIT BOX.
ROUND DRAW BOX
S 100x100 DRAW BOX
P 100x50 BOX BEHIND POWER SKIRTING
U CONDUIT TURNED UP ("U" FOR DOWN)
D DOWN CONDUCTOR TO EARTH OR EARTH TIE.
20ø CONDUIT.
25ø CONDUIT.
32ø CONDUIT.
50ø CONDUIT.
S SURFIX
U TWIN AND EARTH POWER CABLE
OC OVERHEAD CAST-IN
OS OVERHEAD ON SURFACE OR LAID ON CEILING.
FC FLOOR SLAB CAST-IN.
POWER SKIRTING
TRUNKING
CABLE SLEEVE.
CABLE TRAY/ LADDER
3 REFERENCE TO QUANTITY i.e. 3No.
2 REFERENCE TO A DETAIL.
4 REFERENCE TO AN ELECT. NOTE i.e. NOTE 4.

T TELEPHONE JB.
I INTERCOM JB.
D DATA/COMMS JB.
S SECURITY, ETC. JB
DB POSITION.
DB-1 BOARD DESIGNATION NUMBER.
16AMP. SWITCHED SOCKET OUTLET (SSO).
DOUBLE 16AMP. SSO.
16AMP. SSO ON PEDESTAL.
3 PHASE SSO.
13AMP. SQUARE PIN SSO.
5A 3 PIN UNSWITCHED SOCKET OUTLET.
16A CLEAN SSO WITH RED COVER PLATE, SQUARE EARTH PLUG TOP ON PEDESTAL
INTERMEDIATE LIGHT SWITCH
SINGLE LEVER ONE WAY LIGHT SWITCH.
2-WAY LIGHT SWITCH
FLUORESCENT LUMINAIRE
BULKHEAD/DOWN LIGHTER, ETC.
WALL MOUNTED LUMINAIRE.
TWO POLE ISOLATOR.
THREE POLE ISOLATOR.
FOUR POLE ISOLATOR.
TELEPHONE POINT.
TELEPHONE POINT ON PEDESTAL.
DIRECT OUTSIDE LINE TELE. POINT (CALL BOX).
TV OUTLET.
DATA/COMMS OUTLET.
PHOTOCELL

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Cable No.	FROM	TO	Load Amps	N° of Cores	Size mm²	N° // Cables	Cable Type	Earth Cond. Type	Earth Cond. Size	Route Length m	Cond of Use	Defined Use	Upstream protective device rating	REMARKS
P001	Msunduzi Municipal Switchroom	Main Switchroom Incomer		3	70		11				G		630	Existing cable. To be replaced.
P002	Main Switchroom Feeder 1	Mini-Sub D RMU		3	70		11				G		630	Existing cable from main switchroom to be joined with existing cable from outside RMU to Minisub
P003	Main Switchroom Feeder 2	New 100kVA Mini-Sub RMU		3	70	1	11	1E	70	30	G	S	630	New cable
P004	Mini-Sub C RMU	Mini-Sub D RMU		3	70	1	11	1E	70	420	G	S	630	Existing cable from Minisub C to outside RMU to be extended to Mini-Sub D with a new cable
P005														
P006														
P007														
P008														
P009														
P010														
P011														
P012														
P013														
P014														
P015														
P016														
P017														
P018														
P019														
P020														
P021														
P022														
P023														
P024														
P025														

Cable Type:

600/ 1000V rating
1= Cu. Pvc in conduit
2=Cu. Pvc, Pvc
3= Cu, Pvc, Swa, ECC, PVC
4= Cu. Pvc, Swa plain, PVC
5=Resin encapsulated Cu busbar
6=
7=

6.35/ 11kV rating
8=AL,ABC XLPE aerial self supporting
9=AL PILC armored PVC
10=Cu XLPE SWA PVC copper tape
11= Cu, PILC armoured PVC
12=
13=
14=

Earth Conductor type
1E= Cu PVC
2E= SWA/ECC
3E= Cu bar
4E= Bare Cu
5E = CuPVC + SWA

Cond. of Use
A=Aerial
C=Conduit
D=Duct
G=Direct in ground
K=Direct Sun
T=Tray/ ladder

Defined Use
T1=Trefoil-RWB grouping
T2=Trefoil grouping per phase
S=Spaced <0.5 diameter between cables/ walls
S1=Spaced ≥0.5 diameter to adjacent cable/ walls.

REV	DESCRIPTION	BY	DATE	CHKD
A	Issued for information	JK	07/10/24	JK
0	Original issue	JK	23/09/24	JK

ENGINEER: JK | DRAWN: ND | DATE: Sep 24 | CHKD: JK | P SIZE: A4
PROJ No.: 21063 | DWG No: 600 | REV: A | SCALE: nts
FILE NAME: | SHEET: 1 of 1

TITLE:
Fort Napier Hospital
Replacement of MV Switchgear

Electrical Cable Schedule

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MINI SUBSTATION C - SCHEDULE OF REQUIREMENTS

SYSTEM VOLTAGE AND FREQUENCY		11000 Volts, 50 Hz
SYSTEM FAULT LEVEL		350MVA
SITE LOCATION		Fort Napier Hospital, Pietermaritzburg
CLIMATIC CONDITIONS	Altitude	720m Above Sea Level
	Ambient Temperature	5°C to 45°C
	Relative Humidity	95%
MINISUB DESIGNATION		MINISUB C

		ENCLOSURE	
1		Designation & Labelling	MINISUB C
2	Construction	Material	3CR12
3		Degree of Protection	IP 54. Doors to be gasketed and pad lockable
4		Colour	Colour to be advised
5		Arrangement	Freestanding on concrete base.
6		Signage	Statutory
7		Physical	Indicative size (l) x (w) x (h). Indicative weight (kg)
		MEDIUM VOLTAGE SECTION	
1		Designation & Labelling	MINISUB C RMU
2		Unit Type	3 Way Isolator-circuit breaker-isolator 630A non-extensible
3		Switch Manufacturer	Eaton Xiria or similar approved
4		Configuration	630A Load make, fault break disconnector 200A vacuum circuit breaker 630A Load make, fault break disconnector
5		Rated Voltage	17.5kV
6		Fault Rating (Short Withstand)	20kA for 1 second (50Hz)
7		Impulse Withstand Voltage (1.2/50µs)	95kV rms (50Hz at 12kV)
8		Closing Mechanism	Spring charged
9		Tripping Mechanism	Self Powered Relay
10		Protection Relays	Fanox SIA-B self powered relay with internal commissioing battery
11		Outputs	2 No normally open, and 2 No normally closed auxillaries wired to terminals (1.5mm^2)
12	CT's	Metering (Ratio, Burden, Accuracy Class)	-
13		Protection (Ratio, Burden, Accuracy Class)	-
14		Pilot Wire	-
15		Voltage Transformers (Ratio, Burden, Accuracy Class)	-
16	Indication	Fault	Earth fault indication on incoming and outgoing legs of the RMU
17		Other	3 neon 'cable live' indicators. Transformer flagging/indication relay which must have battery backup to hold the indication of fault received from the transformer.
18		Cable Entry And Glands to Suit Cable	70mm^2 PILC 6.35/11kV cable with copper conductors. Cable box mechanically interlocked to open switched in earth points
19	Additional Equipment	Maintenance Tools	One complete set
20		Shutter Padlocks And Keys	Padlocks on all functions, earth and operations
21		O&M Manual	Three complete sets hardcopy. One complete set electronically
22	Testing	Factory	Dielectric Test. 22kV for 1 minute Magnetic curve tests on CT's Protective device Primary Injection test
23		Site	5kV and 2kV megger test on power and control circuits respectively Phase Rotation Pressure test at 18kV DC after installation Setting up of protection relays for over load protection, over current protection, load monitoring, fault event recording, interfaces with remote PC Full Functional Test
24	General	Arrangement	Mounted on 600mm base within minisub enclosure
25		Signage	Statutory
		TRANSFORMER	
1		Designation & Labelling	MINISUB C Transformer
2		Nature of Load and Mode of Operation	General commercial load including fluorescent lamps, discharge lamps, LED Lights, variable frequency drives, lift/pump/fan motors
3		Transformer Manufacturer	Actom/ Matlakse or similar approved
4		Transformer Type	Oil Immersed in tank
5		Winding	Double wound copper
6		Rating	800kVA
7		Primary Voltage	11kV
8		Secondary Voltage	400V
9		No of Phases (primary/secondary)	3/3
10		Vector Group	Dyn11
11		% Impedance / losses	SABS Standard loss - 5%
12		Flux density in Core	Not to exceed 1.5 tesla
13		Noise Level	To SABS
14		Cooling	ONAN
15	Protection & Indication	Bucholz	N/A
16		Thermometer	Dail Type alarm and trip
17		Protection Wiring Termination facility	York type with cover c/w Klippon 25A terminals addressed wired to temp alarm and trip N/C temperature trip and alarm contacts

REV	DESCRIPTION	BY	DATE	CHKD
A	Issued for Tender	ND	07/10/24	JK
0	Original Issue	ND	23/09/24	JK

ENGINEER: JK | DRAWN: ND | DATE: Sep'24 | P. SIZE: A3 | CHKD:
PROJ No.: 21063 | Dwg no. 601 | SCALE: nts | REV: A
FILE NAME: 21063_601 | SHEET: 1 of 2

PROJECT:
Fort Napier Hospital
Replacement of MV Switchgear

Minisub Schedule - Minisub C

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MINI SUBSTATION C - SCHEDULE OF REQUIREMENTS

	SYSTEM VOLTAGE AND FREQUENCY		11000 Volts, 50 Hz
	SYSTEM FAULT LEVEL		350MVA
	SITE LOCATION		Fort Napier Hospital
	CLIMATIC CONDITIONS	Altitude	720m Above Sea Level
		Ambient Temperature	5°C to 45°C
		Relative Humidity	95%
	MINISUB DESIGNATION		MINISUB C

		TRANSFORMER (CONTINUED)	
18	Construction	Breather	N/A
19		MV Termination facility	Bushing in cable box for 70mm2 6.35/11kV PILC 3C Cu cable Sheathed, Cu conductors from below
20		LV Termination facility	Bushing in cable box
21		Indoor / Outdoor	Outdoor, external bolts hot dipped galvanised
22		Tap Changer	0 +- 2.5 +-5% (5 positions off load) Complete with keyed alike padlock
23		Drain Valve and Plug	Lockable valve and keyed alike padlock
24		Skids/ Wheels flat under base	Skids
25		Conservator/ Sealed cover	Sealed bolted
26		Earth Terminal	On tank MV and LV side
27	Additional Equipment	Rigging Equipment	Lifting lugs and jacking pads required
28		Base	Skids
30		O&M Manual	Three complete sets hardcopy. One complete set electronically
31	Testing	Factory	All SABS group 3 tests
32		Site	5kV and 2kV megger test on MV and LV respectively Pressure test at 21kV for 1 minute (RMU only) Temp alarm and trip Oil flash and chemical test Phase rotation and displacement Open circuit voltage
31	General	Colour	Manufacturers standard
32		Dimensions	To fit minisub housing
33		Arrangement	Within minisub housing
34		Signage	Statutory & rating and diagram plate
		LOW VOLTAGE SECTION	
1	Fault Level		20kA
2	Incomong	Switchgear	Schneider 1250A MCCB or similar approved with electronic tripping
3		Metering	Schneider PM 5110 wired to 1250/5 CT's
4		Indication	as per PM meter
5	Outgoing	Switchgear	Schneider MCB's or similar approved with TMD tripping protection. 1x400A, 2 x 250A ;2x160A ; 3x100A; 4 x60A
6		Metering	-
7		Indication	-

Notes

Minisub to comply with all relevant standards as supplied under project specifications

Minisub to be supplied complete with precast plinth

Earth stud required welded to the minisub enclosure

REV	DESCRIPTION	BY	DATE	CHKD
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JK	ND	Sep'24	A3	
PROJ No.:		Dwg no.	SCALE	REV
21063		601	nts	A

FILE NAME 21063_601 SHEET: 2 of 2

PROJECT:

Fort Napier Hospital
Replacement of MV Switchgear

Minisub Schedule - Minisub C

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MINI SUBSTATION D - SCHEDULE OF REQUIREMENTS

SYSTEM VOLTAGE AND FREQUENCY		11000 Volts, 50 Hz
SYSTEM FAULT LEVEL		250MVA
SITE LOCATION		Fort Napier Hospital, Pietermaritzburg
CLIMATIC CONDITIONS	Altitude	720m Above Sea Level
	Ambient Temperature	5°C to 45°C
	Relative Humidity	95%
MINISUB DESIGNATION		MINISUB D

		ENCLOSURE	
1		Designation & Labelling	MINISUB D
2	Construction	Material	3CR12
3	Construction	Degree of Protection	IP 54. Doors to be gasketed and pad lockable
4	Construction	Colour	Colour to be advised
5	Construction	Arrangement	Freestanding on concrete base.
6	Construction	Signage	Statutory
7	Construction	Physical	Indicative size (l) x (w) x (h). Indicative weight (kg)
		MEDIUM VOLTAGE SECTION	
1		Designation & Labelling	MINISUB D RMU
2		Unit Type	3 Way Isolator-circuit breaker-isolator 630A non-extensible
3		Switch Manufacturer	Eaton Xiria or similar approved
4		Configuration	630A Load make, fault break disconnector 200A vacuum circuit breaker 630A Load make, fault break disconnector
5		Rated Voltage	17.5kV
6		Fault Rating (Short Withstand)	20kA for 1 second (50Hz)
7		Impulse Withstand Voltage (1.2/50µs)	95kV rms (50Hz at 12kV)
8		Closing Mechanism	spring charged
9		Tripping Mechanism	Self Powered Relay
10		Protection Relays	Fanox SIA-B self powered relay with internal commissioing battery or similar approved
11		Outputs	2No. normally open, and 2No. normally closed auxillaries wired to terminals (1.5mm^2)
12	CT's	Metering (Ratio, Burden, Accuracy Class)	-
13	CT's	Protection (Ratio, Burden, Accuracy Class)	-
14	CT's	Pilot Wire	-
15		Voltage Transformers (Ratio, Burden, Accuracy Class)	-
16	Indication	Fault	Earth fault on indication on incoming and outgoing legs of the RMU
17	Indication	Other	3 neon 'cable live' indicators. Transformer flagging/indication relay which must have battery backup to hold the indication of fault received from the transformer
18		Cable Entry And Glands to Suit Cable	70mm^2 PILC 6.35/11kV cable with copper conductors. Cable box mechanically interlocked to open switched in earth points
19	Additional Equipment	Maintenance Tools	One complete set
20	Additional Equipment	Shutter Padlocks And Keys	Padlocks on all functions, earth and operations
21	Additional Equipment	O&M Manual	Three complete sets hardcopy. One complete set electronically
22	Testing	Factory	Dielectric Test. 22kV for 1 minute Magnetic curve tests on CT's Protective device Primary Injection test
23	Testing	Site	5kV and 2kV megger test on power and control circuits respectively Phase Rotation Pressure test at 18kV DC after installation Setting up of protection relays for over load protection, over current protection, load monitoring, fault event recording, interfaces with remote PC Full Functional Test
24	General	Arrangement	Mounted on 600mm base within minisub enclosure
25	General	Signage	Statutory
		TRANSFORMER	
1		Designation & Labelling	MINISUB D Transformer
2		Nature of Load and Mode of Operation	General commercial load including fluorescent lamps, discharge lamps, LED Lights, variable frequency drives, lift/pump/fan motors
3		Transformer Manufacturer	Actom/ Matlakse or similar approved
4		Transformer Type	Oil Immersed in tank
5		Winding	Double wound copper
6		Rating	315kVA
7		Primary Voltage	11kV
8		Secondary Voltage	400V
9		No of Phases (primary/secondary)	3/3
10		Vector Group	Dyn11
11		% Impedance / losses	SABS Standard loss - 5%
12		Flux density in Core	Not to exceed 1.5 tesla
13		Noise Level	To SABS
14		Cooling	ONAN
15	Protection & Indication	Bucholz	N/A
16	Protection & Indication	Thermometer	Dail Type alarm and trip
17	Protection & Indication	Protection Wiring Termination facility	York type with cover c/w Klippon 25A terminals addressed wired to temp alarm and trip N/C temperature trip and alarm contacts

REV	DESCRIPTION	BY	DATE	CHKD
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21063		602	nts	A

FILE NAME: 21063_602 SHEET: 1 of 2

PROJECT:
Fort Napier Hospital
Replacement of MV Switchgear

Minisubstation Schedule - Minisub D

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MINI SUBSTATION D - SCHEDULE OF REQUIREMENTS

	SYSTEM VOLTAGE AND FREQUENCY		11000 Volts, 50 Hz
	SYSTEM FAULT LEVEL		250MVA
	SITE LOCATION		Fort Napier Hospital
	CLIMATIC CONDITIONS	Altitude	720m Above Sea Level
		Ambient Temperature	5°C to 45°C
		Relative Humidity	95%
	MINISUB DESIGNATION		MINISUB D

		TRANSFORMER (CONTINUED)	
18	Construction	Breather	N/A
19		MV Termination facility	Bushing in cable box for 70mm2 6.35/11kV PILC 3C Cu cable Sheathed, Cu conductors from below
20		LV Termination facility	Bushing in cable box
21		Indoor / Outdoor	Outdoor, external bolts hot dipped galvanised
22		Tap Changer	0 +- 2.5 +-5% (5 positions off load) Complete with keyed alike padlock
23		Drain Valve and Plug	Lockable valve and keyed alike padlock
24		Skids/ Wheels flat under base	Skids
25		Conservator/ Sealed cover	Sealed bolted
26		Earth Terminal	On tank MV and LV side
27	Additional Equipment	Rigging Equipment	Lifting lugs and jacking pads required
28		Base	Skids
30		O&M Manual	Three complete sets hardcopy. One complete set electronically
31	Testing	Factory	All SABS group 3 tests
32		Site	5kV and 2kV megger test on MV and LV respectively Pressure test at 21kV for 1 minute (RMU only) Temp alarm and trip Oil flash and chemical test Phase rotation and displacement Open circuit voltage
31	General	Colour	Manufacturers standard
32		Dimensions	To fit minisub housing
33		Arrangement	Within minisub housing
34		Signage	Statutory & rating and diagram plate
		LOW VOLTAGE SECTION	
1	Fault Level		20kA
2	Incomong	Switchgear	Schneider 450A MCCB or similar approved with electronic tripping protection
3		Metering	Schneider PM 5110 wired to 500/5 CT's
4		Indication	-
5	Outgoing	Switchgear	Schneider MCB's or similar approved with TMD tripping protection. 1x200A, 1 x 125A ;2x100A ; 1x63A
6		Metering	-
7		Indication	-

Notes

Minisub to comply with all relevant standards as supplied under project specifications

Minisub to be supplied complete with precast plinth

Earth mat to be supplied

REV	DESCRIPTION	BY	DATE	CHKD
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21063		602	nts	A

FILE NAME 21063_602 SHEET: 2 of 2

PROJECT:

Fort Napier Hospital
Replacement of MV Switchgear

Minisubstation Schedule - Minisub D

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NEW MINI SUBSTATION E - SCHEDULE OF REQUIREMENTS

SYSTEM VOLTAGE AND FREQUENCY		11000 Volts, 50 Hz
SYSTEM FAULT LEVEL		350MVA
SITE LOCATION		Fort Napier Hospital
CLIMATIC CONDITIONS	Altitude	720m Above Sea Level
	Ambient Temperature	5°C to 45°C
	Relative Humidity	95%
MINISUB DESIGNATION		MINISUB E

		ENCLOSURE	
1		Designation & Labelling	MINISUB E
2	Construction	Material	3CR12
3	Construction	Degree of Protection	IP 54. Doors to be gasketed and pad lockable
4	Construction	Colour	Colour to be advised
5	Construction	Arrangement	Freestanding on concrete base.
6	Construction	Signage	Statutory
7	Construction	Physical	Indicative size (l) x (w) x (h). Indicative weight (kg)
		MEDIUM VOLTAGE SECTION	
1		Designation & Labelling	MINISUB E RMU
2		Unit Type	3 Way Isolator-circuit breaker-isolator 630A non-extensible
3		Switch Manufacturer	Eaton Xiria or similar approved
4		Configuration	630A Load make, fault break disconnector 200A vacuum circuit breaker 630A Load make, fault break disconnector
5		Rated Voltage	17.5kV
6		Fault Rating (Short Withstand)	20kA for 1 second (50Hz)
7		Impulse Withstand Voltage (1.2/50µs)	95kV rms (50Hz at 12kV)
8		Closing Mechanism	Spring charged
9		Tripping Mechanism	Self Powered Relay
10		Protection Relays	Fanox SIA-B self powered relay with internal commissioing battery or similar approved
11		Outputs	2 No normally open, and 2 No normally closed auxillaries wired to terminals (1.5mm^2)
12	CT's	Metering (Ratio, Burden, Accuracy Class)	-
13	CT's	Protection (Ratio, Burden, Accuracy Class)	-
14	CT's	Pilot Wire	-
15		Voltage Transformers (Ratio, Burden, Accuracy Class)	-
16	Indication	Fault	Earth fault indication on incoming and outgoing legs of the RMU
17	Indication	Other	3 neon 'cable live' indicators. Transformer flagging/indication relay which must have battery backup to hold the indication of fault received from the transformer
18		Cable Entry And Glands to Suit Cable	70mm^2 PILC 6.35/11kV cable with copper conductors. Cable box mechanically interlocked to open switched in earth points
19	Additional Equipment	Maintenance Tools	One complete set
20	Additional Equipment	Shutter Padlocks And Keys	Padlocks on all functions, earth and operations
21	Additional Equipment	O&M Manual	Three complete sets hardcopy. One complete set electronically
22	Testing	Factory	Dielectric Test. 22kV for 1 minute Magnetic curve tests on CT's Protective device Primary Injection test
23	Testing	Site	5kV and 2kV megger test on power and control circuits respectively Phase Rotation Pressure test at 18kV DC after installation Setting up of protection relays for over load protection, over current protection, load monitoring, fault event recording, interfaces with remote PC. Secondary injection testing Full Functional Test
24	General	Arrangement	Mounted on 600mm base within minisub enclosure
25	General	Signage	Statutory
		TRANSFORMER	
1		Designation & Labelling	MINISUB E Transformer
2		Nature of Load and Mode of Operation	General commercial load including fluorescent lamps, discharge lamps, LED Lights, variable frequency drives, lift/pump/fan motors
3		Transformer Manufacturer	Actom/ Matlakse or similar approved
4		Transformer Type	Oil Immersed in tank
5		Winding	Double wound copper
6		Rating	100kVA
7		Primary Voltage	11kV
8		Secondary Voltage	400V
9		No of Phases (primary/secondary)	3/3
10		Vector Group	Dyn11
11		% Impedance / losses	SABS Standard loss - 5%
12		Flux density in Core	Not to exceed 1.5 tesla
13		Noise Level	To SABS
14		Cooling	ONAN
15	Protection & Indication	Bucholz	N/A
16	Protection & Indication	Thermometer	Dail Type alarm and trip
17	Protection & Indication	Protection Wiring Termination facility	York type with cover c/w Klippon 25A terminals addressed wired to temp alarm and trip N/C temperature trip and alarm contacts

REV	DESCRIPTION	BY	DATE	CHKD
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PROJ No.:		Dwg no.	SCALE	REV
21063		603	nts	A

FILE NAME: 21063_603 SHEET: 1 of 2

PROJECT:
Fort Napier Hospital
Replacement of MV Switchgear

Mini sub Schedule - Minisub E

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NEW MINI SUBSTATION E - SCHEDULE OF REQUIREMENTS

	SYSTEM VOLTAGE AND FREQUENCY		11000 Volts, 50 Hz
	SYSTEM FAULT LEVEL		350MVA
	SITE LOCATION		Fort Napier Hospital
	CLIMATIC CONDITIONS	Altitude	720m Above Sea Level
		Ambient Temperature	5°C to 45°C
		Relative Humidity	95%
	MINISUB DESIGNATION		MINISUB E

		TRANSFORMER (CONTINUED)	
18	Construction	Breather	N/A
19		MV Termination facility	Bushing in cable box for 70mm2 6.35/11kV PILC 3C Cu cable Sheathed, Cu conductors from below
20		LV Termination facility	Bushing in cable box
21		Indoor / Outdoor	Outdoor, external bolts hot dipped galvanised
22		Tap Changer	0 +- 2.5 +-5% (5 positions off load) Complete with keyed alike padlock
23		Drain Valve and Plug	Lockable valve and keyed alike padlock
24		Skids/ Wheels flat under base	Skids
25		Conservator/ Sealed cover	Sealed bolted
26		Earth Terminal	On tank MV and LV side
27	Additional Equipment	Rigging Equipment	Lifting lugs and jacking pads required
28		Base	Skids
30		O&M Manual	Three complete sets hardcopy. One complete set electronically
31	Testing	Factory	All SABS group 3 tests
32		Site	5kV and 2kV megger test on MV and LV respectively Pressure test at 21kV for 1 minute (RMU only) Temp alarm and trip Oil flash and chemical test Phase rotation and displacement Open circuit voltage
31	General	Colour	Manufacturers standard
32		Dimensions	To fit minisub housing
33		Arrangement	Within minisub housing
34		Signage	Statutory & rating and diagram plate
		LOW VOLTAGE SECTION	
1	Fault Level		10kA
2	Incomong	Switchgear	Schneider 160A MCCB or similar approved with electronic tripping
3		Metering	Schneider PM 5110 wired to 160/5 CT's
4		Indication	As provided by the PM5110
5	Outgoing	Switchgear	Schneider MCCB's or similar approved with TMD tripping protection, 3x60A
6		Metering	-
7		Indication	-

Notes

Minisub to comply with all relevant standards as supplied under project specifications

Minisub to be supplied complete with precast plinth

Earth stud to be installed on the minisub

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21063		603	nts	A

FILE NAME 21063_603 SHEET: 2 of 2

PROJECT:

Fort Napier Hospital
Replacement of MV Switchgear

Mini Sub Schedule - Minisub E

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SUBSTATION A - RING MAIN UNIT SPECIFICATION

SYSTEM VOLTAGE AND FREQUENCY		1100 Volts, 50 Hz
SYSTEM FAULT LEVEL		250MVA
SITE LOCATION		Fort Napier Hospital, Pietermaritzburg
CLIMATIC CONDITIONS	Altitude	720m above sea level
	Ambient Temperature	5°C to 40°C
	Relative Humidity	95%
DESIGNATION		Substation A- Ring Main Unit

	Item:	Description:
1	**Unit Type and Rating:**	Eaton Xiria 3 way isolator-circuit breaker-isolator 630 Amp busbar non extensible, housed in fibreglass enclosue suitable for external use. Free standing on concrete base 17.5kV 25kA Fault Level for 1 sec at 50Hz. 95kV RMS at 50Hz
2	**Configuration:**	2 No. 630A Load make fault break switch disconnectors 1 No. 200A T-off circuit breaker for transfromer Integral Earth switches on switch disconnectors and circuit breaker.
3	**Protection and Indication:**	Earth fault on circuit breaker protection relay Cable alive lights on ring cables and transfromer feeder Fanox SIA-B self powered relay on Tranformer leg only Transfromer Bucholtz and Temperature trip function via 220V shunt trip Transfromer Bucholtz and temperature flgging relay which must have battery backup to hold the indication of the fault received
4	**Metering:**	n/a
5	**Cable Entries:**	Cable Box with removable gland plate on bottom, with no cross brace, suitable for Rachem Heat Shrink termination, cable gland and Elastimold screened connectors for Transformer feed. Suitable for 6.35/11kV 70mm² 3 core XLPE cables
6	**Factory Tests:**	Pressure Tested. Operation of Protection. Functional test on Isolators and Circuit Breakers.
7	**Site/Commissioning Tests:**	Pressure Test. Phase Rotation. Protection Operation. Functional Test on Isolators,Circuit Breakers with secondary injection testing . Setting of Protection.
8	**General Arrangement:**	All necessary safety and Identification labelling. Outdoor IP65 enclosure type made to be mounted of a concrete plinth but with steel eylets to be tranfered onto a steel base
9	**Colour:**	Complete unit including cable boxes and base to be Grey Hammertone - Vedoc VEP 7306.
10	**Auxillaries:**	2 No. N/O and 2 No. N/C wired to terminals - 1.5mm2 terminals
11	**CT's:**	N/A
12	**VT's:**	N/A
13	**BTU:**	N/A
14	**Base:**	600mm high mild steel galvanised base painted black suitable for sraddling 1000mm wide trench.
15	**Switching Method:**	Manual Push Button.
16	**Locking Facilities:**	In Earth and Open positions (Pad lockable).

Notes

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PROJ No.:		DWG No	REV	SCALE
21063		604	A	nts

FILE NAME: SHEET: 1 of 1

TITLE: **Fort Napier Hospital**
Replacement of MV swithgear
Substation A - RMU Specfifications

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INCOMER SWITCHROOM SWITCHGEAR- SCHEDULE OF REQUIREMENTS (ANNEXURE D)

SYSTEM VOLTAGE AND FREQUENCY		11000 Volts, 50 Hz
SYSTEM FAULT LEVEL		350MVA
SITE LOCATION		Fort Napier Hospital, Pietermaritzburg
CLIMATIC CONDITIONS	Altitude	720m above Sea Level
	Ambient Temperature	5°C to 40°C
	Relative Humidity	95%
TYPE OF SWITCHGEAR		Indoor Extensible Metal Clad Vacuum. Single 630A Copper Busbar
SWITCHBOARD DESIGNATION		Intake substation

		PANEL	1	2	3	4
1		Designation & Labelling	Incomer 1	Ring Feeder 1	Ring Feeder 2	Minisub E
2		Switch Type	Fixed - vacuum + solid state insulation	Fixed - vacuum + solid state insulation	Fixed - vacuum + solid state insulation	Fixed - vacuum + solid state insulation
3		Switch Manufacturer	tbc	tbc	tbc	tbc
4		Rating (Full Load)	630A	630A	630A	630A
5		Fault Rating (Short Withstand)	20kA for 3 seconds	20kA for 3 seconds	20kA for 3 seconds	20kA for 3 seconds
6		Impulse Withstand Voltage (1.2/50µs)	95kV	95kV	95kV	95kV
7		Closing Mechanism	Motorised - spring charged	Motorised- spring charged	Motorised - spring charged	Motorised - spring charged
8		Tripping Mechanism	Front push button and 30V DC Shunt Trip	Front push button and 30V DC Shunt Trip	Front push button and 30V DC Shunt Trip	Front push button and 30V DC Shunt Trip
9	Protection	Protection Relays	P3F30	P3F30	P3F30	P3F30
10	Protection	Trf Buccholz Trip	n/a	n/a	n/a	n/a
11	Protection	Trf Oil Temperature Trip	n/a	n/a	n/a	n/a
12	Protection	Bus Zone Protection	-	-	-	-
13	Protection	Intertrip	-	-	-	-
14	Alarm	Transformer Bucholz	-	-	-	-
15	Alarm	Transformer Oil Temparature	-	-	-	-
16	Alarm	Outputs	Circuit breaker trip - n/o, n/c	Circuit breaker trip - n/o, n/c	Circuit breaker trip - n/o, n/c	Circuit breaker trip - n/o, n/c
17	CT's	Metering (Ratio, Burden, Accuracy Class)	300/150/5A , 5VA, CLASS 0.2.	200/100/5A , 5VA, CLASS 0.2.	200/100/5A , 5VA, CLASS 0.2.	100/50/5A, 5VA, Class 0.2
18	CT's	Protection (Ratio, Burden, Accuracy Class)	300/150/1 5P10, 10VA burden	200/100/1 5P10, 10VA burden	200/100/1 5P10, 10VA burden	100/50/1 5P10, 10VA burden
	CT's	Pilot Wire	-	-	-	-
19		Voltage Transformers (Ratio, Burden, Accuracy Class)	11000/110V star/star class 0.2 40VA burden cable connected.	-	-	-
20	Indication	Ammeter	–	–	–	-
21	Indication	Voltmeter	–	–	–	-
22	Indication	Energy Metering	PM 5310	PM 5110	PM 5110	PM 5110
23	Indication	Outputs		Circuit breaker open/closed - n/o, n/c	Circuit breaker open/closed - n/o, n/c	
24	Indication	Other	3 neon 'cable live' indicators, Interlocking indication, open/close indication	3 neon 'cable live' indicators, Interlocking indication, open/close indication	3 neon 'cable live' indicators, Interlocking indication, open/close indication	
25	Construction	Cable Boxes And Glands to Suit Cable	120mm^2 XLPE 6.35/11kV cable with copper conductors.	70mm2 3 core 6.6/11kV PILC insulated, Cu tape screened, PVC bedded, PVC Sheathed, Cu conductors	70mm2 3 core 6.6/11kV PILC insulated, Cu tape screened, PVC bedded, PVC Sheathed, Cu conductors	70mm2 XLPE 6.35/11kV cable with copper conductors.
26	Construction	Test Terminals And Plugs	Wired directly	Wired directly	Wired directly	Wired directly
27	Construction	Remote Control	On front control panel	On front control panel	On front control panel	On front control panel
28	Construction	Auto Reclosure	10m umbilical cord with switch and outlet on front panel	10m umbilical cord with switch and outlet on front panel	10m umbilical cord with switch and outlet on front panel	10m umbilical cord with switch and outlet on front panel
29	Construction	Anti Condenation Heaters	Required, 220V	Required, 220V	Required, 220V	Required, 220V
30	Construction	Earthing Gear	Integral to circuit breaker	Integral to circuit breaker	Integral to circuit breaker	Integral to circuit breaker
31	Additional Equipment	Racking Equipment	N/A			
32	Additional Equipment	Trip Supply	Refer to drawing 21063_607			
33	Additional Equipment	Maintenance Tools	One complete set			
34	Additional Equipment	Shutter Padlocks And Keys	30mm Viro Padlock	30mm Viro Padlock	30mm Viro Padlock	30mm Viro Padlock
35	Additional Equipment	O&M Manual	Three complete sets hardcopy. One complete set electronically			
36	Testing	Factory	Dielectric Test. 22kV for 1 minute Magnetic curve tests on CT's Protective device Primary Injection test			
37	Testing	Site	5kV and 2kV megger test on power and control circuits respectively Pressure test at 18kV DC after installation Setting up of protection relays for feeder differential protection, over load protection, over current protection, load monitoring, fault event recording, interfaces with remote PC Full Functional Test			
38	General	Colour	Switchgear - Grey Hammertone Vedoc 7306			
39	General	Colour	Battery Trip Unit - Blue			
40	General	Arrangement	Floor standing, trench below			
41	General	Signage	Statutory	Statutory	Statutory	Statutory

Notes

Panels are to comply with all relevant standards as supplied under project specifications

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FILE NAME: 21063_605 SHEET: 1 of 1

TITLE:

Fort Napier Hospital

MAIN INCOMER SWITCHROOM SWITCHGEAR SCHEDULE OF REQUIREMENTS

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DISTRIBUTION TRANSFORMER - SCHEDULE OF REQUIREMENTS

SYSTEM VOLTAGE AND FREQUENCY		11000 Volts, 50 Hz
SYSTEM FAULT LEVEL		250MVA
SITE LOCATION		Fort Napier Hospital, Pietermaritzburg
CLIMATIC CONDITIONS	Altitude	720m above sea level
	Ambient Temperature	5°C to 45°C
	Relative Humidity	95%
TYPE OF TRANSFORMERS		SABS 780
TRANSFORMER DESIGNATION		Transformers - Substation A

	TRANSFORMER		1			
1		Designation & Labelling	Transformer No.1			
2		Nature of Load and Mode of Operation	General commercial load including fluorescent lamps, discharge lamps, variable frequency drives, lift/pump/fan motors			
3		Transformer Manufacturer	Actom/Malakse or equal and approved			
4		Transformer Type	Oil Immersed in tank			
5		Winding	Double wound copper			
6		Rating	315kVA			
7		Primary Voltage	400V			
8		Secondary Voltage	11kV			
9		No of Phases (primary/secondary)	3/3			
10		Vector Group	DYn11			
11		% Impedance / losses	SABS Standard loss - 5%			
12		Flux density in Core	Not to exceed 1.5 tesla			
13		Noise Level	To SABS			
14		Cooling	ONAN			
15	Protection & Indication	Bucholz	Bucholtz Relay with bleeder test valves			
16	Protection & Indication	Thermometer	Dail Type alarm and trip with resttable high set pointers in high level thermo pocket			
17	Protection & Indication	Protection Wiring Termination facility	York type with cover c/w Klippon 25A terminals addressed wired to bucholtz and temp alarm and trip N/C temperature trip and alarm contacts			
18	Construction	Breather	Silica gel large unit with oil pan			
19	Construction	MV Termination facility	Bushing in cable box for 95mm2 XLPE 3C Cu cable Sheathed, Cu conductors from below			
20	Construction	LV Termination facility	Bushing in cable box for SWA ECC cables to the existing main LV board			
21	Construction	Indoor / Outdoor	Outdoor - external bolts hot dip galavanised			
22	Construction	Tap Changer	0 +- 2.5 +-5% (5 positions off load) Complete with keyed alike padlock			
23	Construction	Drain Valve and Plug	Lockable valve and keyed alike padlock			
24	Construction	Skids/ Wheels flat under base	Skids			
25	Construction	Conservator/ Sealed cover	Conservator & oil level glass			
25	Construction	Earth Terminal	On tank MV side			
26	Additional Equipment	Rigging Equipment	Lifting lugs and jacking pads required			
27	Additional Equipment					
28	Additional Equipment	Padlock & Keys	30mm Viro Padlock, keyed alike			
29	Additional Equipment	O&M Manual	Three complete sets hardcopy. One complete set electronically			
30	Testing	Factory	All SABS group 3 tests			
31	Testing	Site	5kV and 2kV megger test on MV and LV respectively Pressure test at 21kV for 1 minute Bucholtz and temp alarm and trip Phase rotation and displacement Open circuit voltage			
32	General	Colour	Transfromer & MV cable box grey hammertone - Vedoc VEP 7306			
33	General	Colour	LV cable box Red hammertone - Vedoc VEP 2410			
34	General	Dimensions	Refer to layout drawing. Dimensions not to exceed 1850mm in length, 1720mm in width and 2200mm in height			
35	General	Arrangement	Floor Standing			
36	General	Signage	Statutory & rating and diagram plate			

Notes

1) MV and LV cable box to be removable without having to drain the oil. MV cable box to have removable gland plate on botton, without bottom cross brace to enable transformer to be replaced without disturbing cable
2) LV cable box to have removabe gland plate at the top without top brace to enable the transfromer to be replaced without disturbing the busbar
3) Transfromers to be suitable for on line filtering by direct connection of hoses via jubilee hose connections
4) Transfromer oil to be tested on site a maximum of 48 hours before energisation - oil flash test + chemical check
5) LV bushings on range of transfromers from 800kVA to 1600kVA to be the same height above finished floor level
6) MV bushings on range of transfromers from 800kVA to 1600kVA to be the same height above finished floor level
7) One litre touch up paint per transfromer to be supplied

REV	DESCRIPTION	BY	DATE	CHKD
A	Issued for Tender	ND	07/10/24	JK
0	Original Issue	ND	23/09/24	JK

ENGINEER:	DRAWN:	DATE:	SCALE	P. SIZE	CHKD
JK	ND	Sep '24	nts	A3	JK
PROJ No.:		DISCIPLINE	DWG No	STATUS	REV
21063			606	-	0

FILE NAME: 21063_606 SHEET: 1 of 1

TITLE:

Fort Napier Hospital
Replacement of MV switchgear

Substation A Transformer Schedule of Requirements

IBUYA Consulting Engineers
"POWERING DEVELOPMENT"
FIRST FLOOR
BAKER TILLY HOUSE
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WESTVILLE, 3629
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TEL: +27 (031) 2667332
E-mail: ibuya@ibuya.co.za

MAIN SWITCH ROOM - BATTERY TRIPPING UNIT SPECIFICATION

SYSTEM VOLTAGE AND FREQUENCY		1100 Volts, 50 Hz
SYSTEM FAULT LEVEL		250MVA
SITE LOCATION		Fort Napier Hospital, Pietermaritzburg
CLIMATIC CONDITIONS	Altitude	720m above sea level
	Ambient Temperature	5°C to 40°C
	Relative Humidity	95%
DESIGNATION		Main Switch room- BTU

	Requirements:	Description:
1	Manufacturer:	TBC
2	Battery Management System:	Required.
3	Battery Type:	Vented Lead Acid.
4	Battery Capacity:	63 A/h.
5	Cell Orientation:	Vertical.
6	Temperature Operating range:	0°C - 40°C
7	Depth of Discharge:	80%
8	Nominal Output System Voltage:	36V
9	Number of Cells:	18
10	General Grouping:	6 Cells per block, 3 banks.
11	Battery Connections:	Lugged and bolted.
12	Charger Capacity:	10A
13	Charger modes required:	Constant Voltage, Constant current.
14	Input Voltage:	Single Phase 230V.
15	Environmental Coating:	Coastal, all PCBs to be conformally coated.
16	Required Alarms:	Charger ouput failure, low dc voltage, high dc voltage, dc earth fault alarm, load test fail ,battery over temperature, mains failure, load disconnected battery / cell end of life.
17	Backup:	Failover backup in the case of battery management system failure required.
18	HMI (LCD display):	Required.
19	Communication:	Modbus 485
20	Colour:	Blue for both enclosures
21	Charger enclosure mounting:	Wall mounting.
22	Separate Battery enclosure:	Yes - floor mounted. Batteries to be mounted on acid resistant rubber with visual air gaps between cells. Enclosure to be naturally ventilated.
		Battery links to be fused.
23	Accessibility / Maintanance:	Batteries must be accesible to replace without briding across to other terminals while removing.
24	Factory Test:	Required and on-site Commissioning Tests required.
25	Nature of Load:	MV overcurrent and Slokor pilot wire relays.
26	Backup failover	Charger backup required if primary monitoring circuit fails
27	Self Test	Automatic load test required every 4 hours

Notes

REV	DESCRIPTION	BY	DATE	CHKD
A	Issued for Tender	ND	07/10/24	JK
0	Original Issue	ND	23/09/24	JK

ENGINEER:	DRAWN:	DATE:	CHKD	P.SIZE
JK	ND	Sep'24	JK	A3
PROJ No.:		DWG No	REV	SCALE
21063		607	A	nts

FILE NAME: SHEET: 1 of 1

TITLE: Fort Napier
Replacement of MV switchgear
Main MV switchgear - Battery Tripping Unit Specfification

IBUYA Consulting Engineers
"POWERING DEVELOPMENT"
FIRST FLOOR
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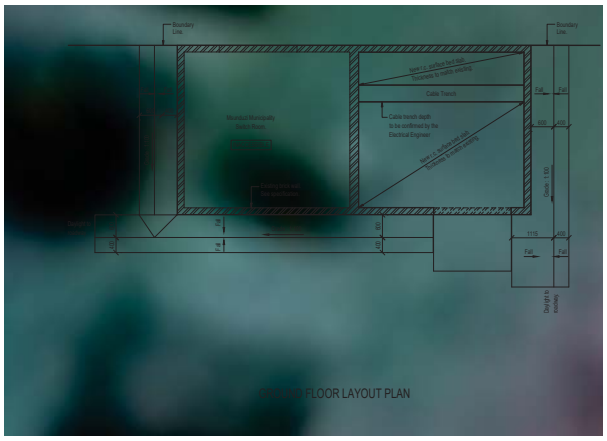
Boundary Line
Cable Trench
Cable trench depth to be confirmed by the Electrical Engineer
Existing Substation
Existing MV Switchgear
Existing Transformer
Existing Transformer
Existing Substation
Existing MV Switchgear
Boundary Line
Existing Substation
Existing MV Switchgear
Existing Transformer
Existing Transformer
Existing Substation
Existing MV Switchgear

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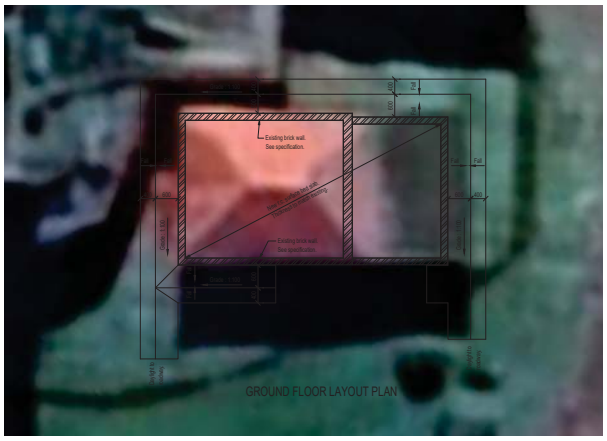
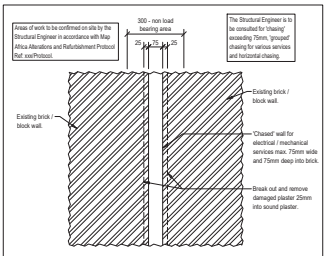
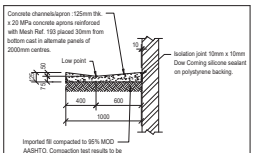




ELEVATION ON WALL
ELECTRICAL / MECHANICAL VERTICAL 'CHASING'
REINSTATEMENT DETAIL

Electrical / Mechanical 'Chasing' Reinstatement Methodology :

1. Break out and remove damaged plaster to 25mm into sound plaster, on either side of 'chased' wall. Clean wall and apply 'Sika Plasterstik' (or equally approved) bonding agent to manufacturer's specifications.
2. Re-plaster wall and finish to Architect's specifications.
3. Contractor to ensure plaster is tightly packed into 'chased' area.
4. When placing conduits the contractor to ensure a minimum of 10mm gap between conduits all round to allow packing of new plaster.



TYPICAL SECTION THROUGH V-DRAIN
APRON / CHANNEL

NOTES:

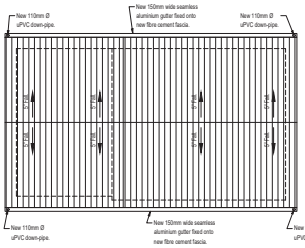
1. All v-drains must be laid to a fall at minimum grade of 1:100 to relief points.
2. Extent and positions of v-drains to be confirmed by the Engineer on site.
3. All v-drain templates are to be inspected by the Engineer prior to any work being put to hand.
4. 7 and 28 day concrete cube compressive strength test results must be provided as soon as available.
5. I.J. (isolation joint) - 10mm x 10mm Dow Corning silicone sealant on polystyrene backing at all v-drain/building interfaces.

A. METAL ROOF SHEETING

1. Double-interlocking concealed-fix Klip-Tile™ 700 profile roll-formed in continuous lengths and cut to length by a pneumatic cut-off process from certified 0.58mm Z275 Galvanised steel. A certificate verifying compliance shall be issued by the manufacturer. sheeting to be finished with a Chromadek® Ultim colour coated finish to one side with a Pebble Grey backing coat to other, to be fixed to every purlin by means of patented KL700 clips having spurs which will securely hold the sheets in position and lock-in the sidelap and both centre ribs. The KL700 clips shall be manufactured from Galvanized steel and shall be fixed with the appropriate self-drilling/tapping screws to steel purlins (selection from installation manual) OR with ZAP no. 10x45mm Waferhead screws type 17 to timber purlins.

B. DAMAGED ROOF TRUSSES REPLACED WITH COMPLETE NEW 'GANG NAILED' ROOF STRUCTURE

1. Existing damaged timber roof trusses to be remove and carted of site.
2. The installation of the gang-nailed roof structure by the main contractor is to be : **A design, supply, install and certify** contract.
3. It is the responsibility of the main contractor to submit the required TR1 and TR2 certificates to us for our records at the relevant stage of the project. The TR1 and TR2 certificates certify that the overall roof structure is structurally stable.
4. It is the responsibility of the main Contractor to ensure that the approved competent person (registered with ECSA) issuing the TR2 certificate has inspected the site, complied with all the required specifications as noted above, and has provided his own specifications / drawings for the truss tie-downs, bracing, etc.
5. The TR1 certificate confirms that the gang-nailed roof trusses have been designed by an approved competent person (registered with ecsa) and the TR2 certificate confirms that the installation of the gang-nailed roof trusses on site has been inspected, checked for compliance with the roof truss shop drawings and approved by an approved competent person (registered with ECSA).



ROOF LAYOUT PLAN

WATERPROOFING TO EXISTING BRICKWORK

EXTERNAL : SURFACE PREPARATION & BRICKSEAL APPLICATION:

1. Remove all vegetation growth, moss, lichen, dirt, efflorescence, oil, grease, and any loose or friable material from the existing wall surface by brushing, scraping, or water cleaning as appropriate.
2. Rake out defective mortar joints and repair where necessary. Ensure the surface is clean, sound, and dry before application.
3. Apply one coat of Brickseal (or equivalent approved masonry primer/sealer) to the prepared wall surface in accordance with the manufacturer's instructions.
4. Allow Brickseal to cure fully before applying plaster.

INTERNAL : SURFACE PREPARATION & 'SIKA CEMFLEX' SLURRY

APPLICATION:

1. Remove all vegetation growth, moss, lichen, dirt, efflorescence, oil, grease, and any loose or friable material from the existing wall surface by brushing, scraping, or water cleaning as appropriate.
2. Mechanically roughen to provide a good bonding.
3. Apply 'Sika Cemflex®' slurry (1 L Cemflex + 1 L water + 3.4 kg cement) by block brush in two coats. Embed Cemflex Fabric where specified with 50 mm overlaps.
4. Apply plaster to the full wall while bonding layer is still tacky.
5. Protect from moisture for 24 hrs.

CONCRETE SPALLING REPAIRS FOR REPAIRS UP TO 30mm THICK:

SURFACE PREPARATION :

- Remove all loose, unsound concrete from the areas to be repaired.
- Cut out around the areas to be repaired to a minimum depth of 10mm to avoid feather edging.
- High pressure water blast the prepared areas to remove any contaminants.
- Ensure that the substrate onto which the repair mortar is to be applied is sound and free from loose material.
- If reinforcing is exposed & shows signs of corrosion, the reinforcing shall be opened up by breaking out the concrete to a depth of 20mm below the reinforcing and 50mm beyond the corroded length of the reinforcing.
- Any exposed steel must be mechanically cleaned and coated with 1 coat of 'pro-struct 68B' : zinc rich primer (or equally approved) @ 4m²/LT.
- Removal of badly corroded reinforcement and its replacement-all to Engineers instructions on site.

PRIMING :

- Pre-dampen prepared surface with water.
- Do not allow to dry out prior to the application of the 'pro-struct 52F : structural concrete (or equally approved).

REPAIR MORTAR :

- Apply 'pro-struct 52F : structural concrete (or equally approved) into the pre-saturated surface.
- Coverage will be approximately 1.4m² @ 10mm thick per 25kg bag of repair mortar.
- Ensure complete substrate contact and maximum compaction.
- Cure the repairs by keeping them damp for 24 hours after the initial set has taken place.

DAMAGED CEILINGS AND CORNICES

1. Remove damaged ceiling and cart rubble off site.
2. Prepare surface to receive new ceiling.
3. Construct new ceiling, ceiling cornices with plaster cornices, to match existing all to be installed according to manufactures specifications.
4. All ceiling boards to be fixed onto new 35x50mm grade S SA Pine timber battens. battens spacing to be Min. 300mm c/c.
5. All materials to be SABS approved.

GENERAL PLASTER REPAIRS & BRICKWORK STITCHING REPAIRS SPECIFICATIONS :

A. GENERAL PLASTER 'CRACK' REPAIRS :

1. Recommendations & Specifications :
   All plaster 'cracking' must be repaired as specified below. The Contractor is also required to determine if any cracks in the plaster have been transferred to the brickwork. (Contractor is required to cut 100mm long x 20mm wide inspection slot). If a crack has transferred to the brickwork, then it needs to be repaired as set out in the specification for brickwork 'stitching'.

1.1. Specification for General 'Plaster' Repair :
   Break out and remove damaged plaster to 50mm into sound plaster. Clean wall and apply 'Sika Plasterstik' (or equally approved) bonding agent to manufacturer's specifications.
   Re-plaster wall and paint to Architects specifications.

1.2. Specification for Plaster Repair 'Cracking' :
   Rake out crack 6mm deep x 6mm wide. Clean out all debris / loose material. Fill with acrylic filler - 'Silkaryl' (or equally approved) to manufacturers specifications. Paint to Architects specifications.

B. SPECIFICATION FOR BRICKWORK 'STITCHING' REPAIR :

a. Rake out crack. Remove all debris / loose material.
b. Stitch crack in brickwork with R8 reinforcing rods.
c. R8 reinforcing rods are to be 300mm long with 50mm bends at both ends - total length = 400mm.
d. R8 reinforcing rods are to be epoxy grouted with 'Prostruct 617' general purpose epoxy adhesive (or equally approved) at 250mm centres, and grouted into (10mm deep) slots cut into brickwork and with (60mm deep) 10mm Ø drill holes at each end to accommodate the bends of the reinforcing rods.
e. All slots and drill holes to be completely filled with epoxy adhesive.
f. All slots to be cut perpendicular to the crack in the brickwork.
g. Epoxy adhesive application to be as per manufacturers' specifications.
h. Apply 'Sika Plasterstik' (or equally approved) and re-plaster wall, however if large areas of plaster has been removed, 450mm wide 'chicken wire mesh' must be 'tacked on' over the cracked area prior to re-plastering.
i. Re-paint plaster to Architects specifications.

CONCRETE SPALLING REPAIRS FOR REPAIRS OVER 30mm THICK:

SURFACE PREPARATION :

- Remove all loose, unsound concrete from the areas to be repaired.
- Cut out around the areas to be repaired to a minimum depth of 10mm to avoid feather edging.
- High pressure water blast the prepared areas to remove any contaminants.
- Ensure that the substrate onto which the repair mortar is to be applied is sound and free from loose material.
- If reinforcing is exposed & shows signs of corrosion, the reinforcing shall be opened up by breaking out the concrete to a depth of 20mm below the reinforcing and 50mm beyond the corroded length of the reinforcing.
- Any exposed steel must be mechanically cleaned and coated with 1 coat of 'pro-struct 68B' : zinc rich primer (or equally approved) @ 4m²/LT.
- Removal of badly corroded reinforcement and its replacement-all to Engineers instructions on site.

PRIMING :

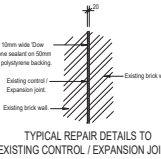
- Pre-dampen prepared surface with water as described below

REPAIR MORTAR :

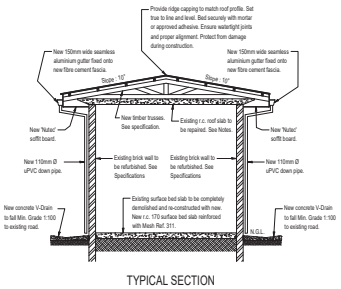
- Shutter up sides and / or soffit of area to be repaired.
- Thoroughly wet the surface of the concrete within the repair area with water
- Drain excess water.
- Mix 'Prostruct 53I-MCI' Five Star Grout (or equally approved) as per detailed instructions and pour repair grout into the shuttered area from one side, ensuring that the grout fills the entire shuttered area with no air pockets.
- Coverage will be approximately 1.4m² @ 10mm thick per 25kg bag of repair grout.
- Leave shutter in position for at least 24Hrs and the strip and clean down the newly repaired surface. Repaired areas must be wet cured for a minimum of 3 days once shutters have been stripped.

NOTES:

1. Scrape out and remove existing mortar filler at control / expansion joint to a minimum depth of 60mm.
2. Insert 50mm x 20mm thick polystyrene backing along length of joint.
3. Apply 10mm deep x 20mm wide Dow Corning silicone sealant to cover joint and make good.



TYPICAL REPAIR DETAILS TO
EXISTING CONTROL / EXPANSION JOINTS



TYPICAL SECTION

Remove all vegetation growth from existing brick walls, including roots and organic matter, without damaging bricks or mortar.

All repair, refurbishment, and/or replacement of Architectural items to match existing, unless otherwise stated.

This Drawing is to be read in conjunction with the latest Electrical Engineer's Drawings and any discrepancies to be reported to the Structural Engineer.

FOR TENDER

Reference Drawings:	Description:
200-630_300	PROPOSED MAIN SWITCH ROOM LAYOUT
200-630_301	PROPOSED SUBSTATION A

Rev.	Description:	By	Date:
T1	FOR TENDER	S.N	12-03-2026
B	OPTIONS FOR WALL WATERPROOFING ADDED	S.N	15-08-2025
A	FOR APPROVAL	S.N	13-08-2025

Client:

public works
Department:
Public Works
PROVINCE OF KWAZULU-NATAL

Project:

FORT NAPIER HOSPITAL : REFURBISHMENT OF THE EXISTING MAIN SUBSTATION, MV ROOM AND SWITCHGEAR HOUSE

Drawing Description:

PROPOSED SUBSTATION A LAYOUT :
STRUCTURAL DETAILS AND SPECIFICATIONS

Consultant:

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	By:	Checked:
Designed	S.N	B.R
Drawn	S.N	B.R

Scale:	Sheet size:	Date:
1:50 1:25 1:10	A1	13-08-2025

Drawing No.:	Rev.:
200-630_301	T1

KWAZULU-NATAL

DEPARTMENT OF HEALTH

STANDARD PREAMBLES TO ALL TRADES

REV 3 – JANUARY 2009

Compiled by:
Department of Health
Infrastructure Development
Engineering Services
Private Bag X9051
PIETERMARITZBURG
3201

INDEX

1. ALTERATIONS 1
- Site Visit ---- 1
- Materials from the Alterations ---- 1
- Asbestos Regulations 2001 ---- 1
- Notice of Disconnections ---- 2
- Dust ---- 2
- Shoring ---- 2
- Matching Existing Work ---- 2
- Forming New Openings etc in Existing Walls ---- 2

2. EARTHWORKS 2
- Site Clearance ---- 2
- Excavations ---- 3
- Water ---- 4
- Working Space ---- 4
- Risk of Collapse ---- 4
- Filling, etc. ---- 4
- Compaction of Filling, etc ---- 5
- Protection against Subterranean Wood-destroying Termites ---- 5
- Re-use of Excavated Material ---- 6
- Demolitions ---- 6
- Grass Planting and Turfing ---- 6

3. CONCRETE, FORMWORK AND REINFORCEMENT
- Interpretations ---- 8
- Definitions ---- 8
- Materials ---- 8
- Reinforcement ---- 9
- Form Work ---- 10
- Concrete Quality ---- 12
- Transportation and Placing ---- 16
- Construction Joints---- 16
- Construction Details ---- 17
- Records ---- 18
- Tests ---- 18
- Acceptance Criteria for Strength of Concrete ---- 19
- Procedure in the Event of Failure ---- 19
- Non-structural Prescribed Mix Concrete ---- 20
- “No Fines” Concrete ---- 20
- Breeze Concrete ---- 21
- Finishes to In-situ Concrete ---- 21
- Unformed Finishes ---- 21
- Tolerances ---- 22
- Supervision ---- 22
- General ---- 22

4. BRICKWORK 23
- Sand ---- 23
- Cement ---- 23
- Lime ---- 24
- Water ---- 24
- Cement Mortar ---- 24
- Compo Mortar ---- 24
- Strength Mortar ---- 24
- Mixing of Mortar ---- 24
- Testing of Strength Mortar ---- 24
- Burnt Clay Common Bricks ---- 24

Bricks for Foundations ---------- 24
Brickwork ---------- 24
Hollow Walls ---------- 25
Brick Linings to Concrete ---------- 25
Reinforced Brick Lintels ---------- 25
Pre-cast, Pre-stressed Concrete Lintels ---------- 25
Bagging Down Brickwork ---------- 25
Cramps ---------- 25
Ties to Wall Plates, Rafters etc. ---------- 25
Welded Mesh Brick Reinforcement ---------- 25
Bitumen Emulsion Waterproofing to Brickwork ---------- 26
Facing Bricks, Paving Bricks, Quarry Tiles etc. ---------- 26
Faced Brickwork ---------- 26
Paving Bricks and Quarry Tiles ---------- 26
Fibre Cement Sills ---------- 26
Rates ---------- 26

5. WATERPROOFING 27
General ---------- 27
Workmanship ---------- 27
Polyethylene Sheeting ---------- 27
Mastic Asphalt Roofing ---------- 27
Flexible Glass Fibre Reinforced Polyester Waterproofing ---------- 28
Expansion Joint Sealants ---------- 28
Rates ---------- 28

6. ROOF COVERINGS 29
Concrete Roofing Tiles ---------- 29
Chromodek roof sheeting ---------- 29
Rates ---------- 29
Corrugated Iron roofing, cladding and filling---------- 30
Fluted steel roofing, cladding and filling---------- 30
Rates for roofing, cladding and filling---------- 31

7. CARPENTRY AND JOINERY 31
Nomenclature of Timbers ---------- 31
Timber Sizes ---------- 31
Storage of Timbers ---------- 32
Orders ---------- 32
Pre-treatment of Timbers ---------- 32
Stress Grading of Softwood Timber ---------- 32
Structural Timber ---------- 32
Brandering and Battens ---------- 32
Joinery and Shelving ---------- 32
Structural Laminated Timbers ---------- 32
Finger-jointed Timbers ---------- 32
Jointing of Purlins, Fascias, Rails, Beams etc ---------- 33
Hard Woods ---------- 33
Prefabricated Timber Roof Trusses ---------- 33
Fabrication and storage---------- 34
Erection and bracing---------- ---------- 35
Rates ---------- 35
Insulation, Waterproofing and Dust Proofing Material for Roofs ---------- 35
Gypsum Plasterboard ---------- 35
Gypsum Coved Cornices ---------- 35
Fibre Cement Sheets ---------- 35
Fibre Cement Cellulose Sheets ---------- 35
Hardboard ---------- 35
Veneers ---------- 35

Plywood ---- 36
Chip Board---- 36
Batten Boarding ---- 36
Decorative Laminate Linings ---- 36
Nails and Screws ---- 36
Plugs, etc ---- 36
Shot Fixing ---- 36
Carpentry ---- 36
Ceilings ---- 36
Flush Plastered Ceilings ---- 36
Trap Doors---- 37
Suspended Ceilings Boards---- 37
Exposed Tee-System Suspended Ceilings---- 37
Concealed Tee-System Suspended Ceilings---- 37
Aluminium Trims to Ceilings ---- 37
Insulation Material for Ceilings---- 37
Doors ---- 38
Framed, Ledged and Braced Batten Doors etc ---- 38
Entrances to Seclusion Wards ---- 38
Doors to X-Ray Units---- 38
Joinery ---- 38
Partitions---- 39
De-mountable Partitions ---- 41
Drywall Partitions ---- 41

8. FLOOR COVERINGS, PLASTIC LININGS, ETC 42
Floor Sheeting ---- 42
Skirtings, Stair Nosings, Edging Strips etc ---- 42
Carpet Tiles and Sheeting ---- 42
Laying ---- 43
Floor Preparation---- 43
Construction Joints---- 44
Glazing---- 44
Rates ---- 44

9. IRONMONGERY ---- 45

10. STRUCTURAL STEELWORK 46
Generally ---- 46
Interpretations ---- 46
Definitions ---- 46
Sub-Contractors ---- 46
Materials ---- 46
Shop Details Drawings ---- 46
Substitution of Sizes etc ---- 46
Fixings ---- 46
Fabrication, Assembly and Erection ---- 47
Inspection and Testing ---- 47
Priming of Structural Steelwork ---- 47
Measurement and Payment ---- 49
Rates ---- 49

11. METALWORK 49
Rates ---- 49
Welding and Brazing ---- 49
Screw Fixings ---- 49
Pipe Members ---- 50
Priming of Steelwork ---- 50
Galvanising of Steelwork ---- 50

Chromium Plating of Steelwork ---------- 50
Pressed Steel Door Frames ---------- 50
Stainless Steel Door Frames---------- 51
Pressed Steel Cupboard Door Frames ---------- 51
Steel Windows and Doors ---------- 52
Stainless Steel ---------- 54
Anodised Aluminium Welded Windows and Doors ---------- 55
Glazing to Dorrs / Aluminium Glazed Screens---------- 57
Strong Room Doors ---------- 58
Burglar Resisting Safes ---------- 58
Adjustable Louver Gear Sets ---------- 58
Rates ---------- 58

12. PLASTERING 58
Mixing---------- 58
Materials ---------- 58
Measurement of Constituent Parts of Floor Finishes, Toppings, Screeds and Plaster Finishes ---------- 59
Preparation of Surfaces ---------- 59
Floor Screeds etc ---------- 59
Granolithic Finish to Concrete Floors etc ---------- 59

13. PLASTER 60
General ---------- 60
Cement Plaster ---------- 60
Barium Plaster ---------- 60
Curing, Protection, etc ---------- 60
Rates ---------- 60
Generally ---------- 61

14. TILING 61
Materials ---------- 61
Measurement of Constituent Parts of Backings, etc ---------- 61
Preparation of Surfaces ---------- 61
Glazed Ceramic Wall Tiles and Fittings ---------- 62
Mosaics ---------- 62
Unglazed Ceramic Floor Tiles and Fittings ---------- 62
Rates ---------- 62
Transition Trims---------- 62
Movement Joints---------- 62

15. DRAINAGE AND PLUMBING 62
Generally ---------- 62
Subsoil Drains ---------- 63
Storm water and Soil Drain Pipes ---------- 63
Concrete Beds and Encasement to Drain Pipes ---------- 63
Pipe Laying ---------- 63
Gulley traps ---------- 63
Grease Traps ---------- 63
Rodding Eyes ---------- 64
Inspection Eye Blocks ---------- 64
Surface Water Channels ---------- 64
Cast Iron Gratings for Gulleys and Storm Water Drains and Cast Iron Surface Boxes, Manhole Covers and Frames ---------- 64
Storm Water Sumps, Junction Boxes, Manholes, Inspection Chambers, Cable Inspection Chambers and Valve Chambers ---------- 64
Soil Drain Manholes and Inspection Chambers ---------- 65
Manhole Covers and Frame---------- 65
Soak Pits ---------- 65

Septic Tanks ---- 65
Testing of Drains, Manholes and Inspection Chambers ---- 66
Defects to be Made Good ---- 67
Sheet Metalwork ---- 67
Linings to Valleys ---- 67
Linings to Secret Gutters ---- 67
Soakers ---- 67
Under-Flashings ---- 67
Cover Flashings ---- 67
Flashings Around Pipes through Roof Coverings ---- 68
Rainwater Pipes ---- 68
Generally ---- 68
Eaves Gutters ---- 68
Sanitary Plumbing and Fittings ---- 69
Sanitary Fittings ---- 69
Rates for Sanitary Ware ---- 70
Below Ground Water Reticulation ---- 70
Above Ground Water Supplies ---- 71
Water Taps and Valves ---- 72
Concrete Thrust and Anchor Blocks ---- 72
Testing of Water Mains ---- 72
Excavations for Pipe Trenches ---- 72
Backfilling ---- 73
Sizes of Pipes ---- 73
Rates for Pipes ---- 73
Rates for Chases, Holes Etc ---- 73
Fire Extinguishers ---- 73
Fire Hose Reels ---- 74
Fire Hydrants ---- 74

16. GLAZING 74
Materials ---- 74
Glazing ---- 75
Rates ---- 75

17. PAINTING 75
Materials ---- 75
Preparatory Work ---- 76
Application of Paints, etc ---- 77
Rates ---- 77

18. ROADWORK 77
Sub-Grade ---- 77
Sub-Base ---- 78
Stabilisation ---- 79
Base Course ---- 80
Chip and Spray Surfacing ---- 80
Double Seal Coat with Black Top Surfacing ---- 82
Slurry Seal Surfacing ---- 82
Premix Tar macadam Surfacing ---- 83
Pre-cast Concrete Paving Blocks ---- 84
Kerbs ---- 85

19. FENCING AND GATES 85
Generally ---- 85
Security Fencing ---- 86
Gates ---- 87

20. SUBMISSIONS FOR PREFABRICATED TIMBER ROOF TRUSSES 90
Letter Ref TR 1---------- 90
Letter Ref TR 2 ---------- 90

21. SUPPLEMENTARY PREAMBLES 91
Alterations ---------- 91
Concrete, Form Work and Reinforcement ---------- 92
Masonry ---------- 92
Roof Coverings, etc ---------- 92
Carpentry and Joinery ---------- 92
Ceilings and Partitions ---------- 93
Ironmongery ---------- 93
Metalwork ---------- 94
Plastering ---------- 94
Tiling ---------- 95
Plumbing and Drainage ---------- 95
Glazing ---------- 95

TABLES

A Removal of Formwork (Minimum Times in Days [24 hours]) ---------- 12
B Concrete Classes: Strength, Aggregate Size and Compaction ---------- 14
C Maximum Cement / Water Ratios for Different Conditions of Exposure ---------- 15
D Slump Limits ---------- 15
E Prescribed Mix Concrete for Non-Structural Purposes ---------- 20
F Crusher Run Base Course: Stone Specifications ---------- 80
G Single coat Pre-mix Wearing Course: Specifications ---------- 83
H Carpentry and Joinery: SANS Specifications ---------- 93

NOTE:

Only those clauses or portions of clauses in the following preambles, which refer to items in the Bills of Quantities, shall be considered as applying to the performance of this Contract.

2.

1. ALTERATIONS

SITE VISIT: — Tenderers are advised to visit the site prior to tendering and satisfy themselves as to the nature and extent of the work to be done, also to examine the condition of all existing buildings as no claim will be entertained on the grounds of ignorance of the conditions under which the work was to be executed.

MATERIALS FROM THE ALTERATIONS: — unless otherwise stated, will become the property of the Contractor and all these materials, together with all rubbish and debris must be carried away and the site left clean and unencumbered.

Items described as "removed" shall mean removed from the site.

Credit for the value of materials from the alterations is to be allowed for on the Summary/ Final Summary page.

Items described as to be re-used or to be handed over to the Administration are to be dismantled where necessary and stacked on site where directed, and the Contractor will be responsible for their removal and storage until required, and shall make good all items missing, damaged or broken at his own expense.

Unless otherwise described, no materials from the alterations shall be re-used in any new work without the written approval of the Department.

Prior to the removal of any timbers from the site, these are to be inspected by Government Entomologists. If any of these timbers are infested by wood destroying agencies, these timbers are to be disposed of in the manner prescribed by the Government Entomologist.

In taking down and removing existing work, particular care must be taken to avoid any structural or other damage to the remaining portions of the buildings.

ASBESTOS REGULATIONS 2001:

In terms of Asbestos Regulations 2001, no individual person, contractor or agent shall remove, demolish or strip any building containing asbestos or products containing asbestos (including asbestos roof sheeting, ceilings, guttering and down pipes) unless the work is performed by a **"Registered Contractor", registered with the Department of Labour**. All asbestos work shall be carried out under the supervision of an "Approved Inspection Authority".

It is a requirement that before any work involving asbestos removal is carried out, the following procedure and documentation is followed: -

1. Prior to the commencement of any demolition work, written notification shall be given to the Assistant Manager (Inspection and Enforcement), Durban Labour Centre, Masonic Grove, Durban, stating the name, address and details of the person(s) removing or stripping the asbestos. The notification shall include the date, time and place where the proposed work is to be carried out. (Regulation 3).

2. The name and details of the Approved Inspection Authority that is to supervise and confirm that the work is being carried out according to the specific requirements of the Asbestos Regulations 2001 (as amended), including the approved "written work procedure" document. This document shall be submitted and signed at least 14 days prior to commencement of demolition work by the Approved Inspection Authority. (Regulation 21).

3. The production of valid accreditation certification of training for all employees involved in the asbestos removal work.

4. On completion of the asbestos related work a “Clearance Certificate” which includes the asbestos disposal certificate shall be forwarded to the Department by the Approved Inspection Authority.

In terms of the above regulations, it is an offence to carry out any asbestos work as defined in the above regulations without the necessary approval / requirements being met.

Individual persons or contractors found to contravene these regulations will be issued with a **PROHIBITION NOTICE** which in effect will stop all work on site and the offenders will then be liable for prosecution.

Any employer found guilty under the Asbestos Regulations 2001 may be liable to a fine and or imprisonment not exceeding 12 months.

NOTICE OF DISCONNECTIONS: — The Contractor is to give ample notice to the Department and Local Authorities regarding any disconnections necessary prior to the removal or interruption of electrical or telephone cables, water supply and sanitary services, etc.

DUST: — The Contractor is to allow in his rates for taking all precautions necessary to prevent any nuisance from dust whilst carrying out the works.

SHORING: — Rates for shoring are to include for the use and waste of all props, needles, wedges, braces, nails and screws, etc. required and for all cutting, notching, framing and fitting, maintaining in position for the required periods and removing at completion. All shoring is to be executed in a manner approved by the Department.

MATCHING EXISTING WORK: — The terms “make good” or “making good” to existing work as described in the items shall mean making good with materials to match, all joined to existing.

FORMING NEW OPENINGS, ETC. IN EXISTING WALLS: — Rates for items of forming new or altering existing openings are, unless otherwise stated, to include for the following: -

a) Breaking out for and inserting adequate lintels over the new openings (except where stated in the items as being below an existing beam, slab or lintel), to the approval of the Department. The lintels are to be of in-situ concrete Class C, or of pre-cast pre-stressed concrete or of brickwork in 1:3 cement mortar, with a minimum bearing of 230mm at each end and suitably reinforced, and rates are to include for all necessary formwork, turning pieces, etc. and for wedging and pinning up to existing brickwork over in 1:3 cement mortar.
b) All shoring and propping required.
c) Facing up jambs in new brickwork in cement mortar properly bonded to existing,
d) Building up the portions of the openings stated in the items in new brickwork in cement mortar properly bonded to existing.
e) Formwork for concrete sills and thresholds where required.
f) Making good only to the finishes as stated in the items. (Note: — The making good of paint finishes has been measured separately).
g) Forming rounded angles, throats on external plastered soffits, mitres, etc. where required in all new plaster, render and granolithic finishes.

The supply, building in, fixing, etc. of all windows, doors, frames, etc. to the newly formed openings and the removal of all existing windows, doors, frames, etc. from openings to be altered, have been elsewhere measured.

2. EARTHWORKS

SITE CLEARANCE: —The item given in the Bills of Quantities for site clearance shall be deemed to include the removal from the site, or burning if permitted by the Local Authority, of shrubs and trees with trunks under 200mm girth measured at 1m above ground level,

hedges, bushes, other vegetation, rubbish and debris.
Holes left by roots are to be backfilled with earth and rammed.

EXCAVATIONS: — Rates for excavations are to include for forming and trimming to the correct levels, falls, slopes, curves, etc. for trimming sides, stepping, levelling and ramming bottoms, staging and disposing of the excavated material as described in the items. Rates for excavations to reduce levels over site are also to include for forming and trimming banks to the required batter. The Contractor is to allow in his rates for the bulking of excavated material.

The term "excavate", unless otherwise stated, shall mean excavate in "soft excavation" as defined below and for the purpose of classifying excavations the following will apply: —

a) **Soft excavation**: — shall be excavation in material that can be efficiently removed by a back-acting excavator of flywheel power approximately 0, 10 kW per millimetre of tined-bucket width without the assistance of pneumatic tools such as paving breakers, or that can be efficiently loaded without prior ripping or stockpiling by a rubber tired front-end loader of approximately 15t mass and a flywheel power of approximately 100 kW.

b) **Intermediate excavation**: — shall be excavation in material that requires a back-acting excavator of flywheel power exceeding 0,10kW per millimetre of tined-bucket width and the assistance of pneumatic tools prior to removal by equipment equivalent to that specified in (a) above.

c) **Hard rock excavation**: — shall be excavation in material that cannot be efficiently removed without blasting or without wedging and splitting prior to removal.

d) **Class A Boulder excavation**: — shall be excavation in material containing more than 40% by volume of boulders of size between 0.03m³ and 20m³ in a matrix of softer material or smaller boulders.
***Note**: —* Excavation of solid boulders or lumps of size exceeding 20m³ will be classed as hard rock excavation. (2) Excavation of fissured or fractured rock will not be classed as boulder excavation but as hard rock or intermediate excavation according to the nature of the material.

e) **Class B Boulder excavation:** — shall be excavation of boulders only in a material containing 40% or less by volume of boulders of size between 0.03m³ and 20m³ in a matrix of softer material or smaller boulders.
***Note**: —* Those boulders requiring individual drilling and blasting in order to be loaded by a back-acting excavator as specified in (a) above, or by a track type front-end loader, will each be separately measured as Class B boulder excavation.
The excavation of the rest of the material will be classed as soft or intermediate excavation according to the nature of the material.

Method of Classifying: —The Contractor may use any method he chooses to excavate any class of material but his chosen method of excavation shall not determine the classification of the excavation. The Department will decide on the classification of the materials. The classification will be based on inspection of the material to be excavated and the criteria given in (a) to (e) above, as applicable. The decision of the Department shall be, subject to the relevant provisions of the contract, final and binding.

Should the Contractor consider that the excavation is other than "soft excavation" he must notify the Department immediately in order that an inspection be made and a decision arrived at by the Department as to the category of such excavation. Should the Contractor fail to give such notification, the excavation shall be deemed to be "soft excavation" and shall be measured and valued accordingly.

Blasting will only be permitted with the written authority of the Department, if and when permission is granted, it is to be executed only by persons holding the necessary Government Blasting Certificate and subject to all regulations imposed by the Department and/or Local Authority. In addition, the Contractor is to indemnify the Provincial Administration against all claims in respect of damage to persons and property resulting from such blasting operations.

Before commencing any excavations, the Contractor must satisfy himself as to the accuracy of any levels indicated on the drawings, as no claim will be entertained at a later date for any alleged inaccuracy in such levels.

Excavation shall be carried down to such depths as are necessary to obtain firm foundations, but before proceeding to greater depths than are shown on the drawings, the Department's approval must be obtained.

The Contractor will be responsible if he excavates wider or deeper than shown or required. If the excavations are deeper than shown or required such extra excavations are to be filled in with mass concrete at the Contractor's expense. If the excavations are wider than shown or required, any form-wait or mass concrete filling required to the side of the concrete foundations is to be executed at the Contractor's expense and to the approval of the Department.

Depths of excavations as approved shall be checked and recorded by the a Departmental Official and the Contractor's Foreman before any concrete is laid or the excavations are otherwise covered or filled in.

Notwithstanding such approval, any excavations which become waterlogged or otherwise spoilt after approval, shall be cleaned out and reformed, at the Contractor's expense and to the satisfaction of the Department, before any concrete, etc. is laid.

WATER: — The Contractor shall keep all excavations free from water or mud by pumping, baling or otherwise.

WORKING SPACE: — The Contractor is to allow against the items of "excavate to provide working space" for excavating beyond the extent of the net excavations measured to provide the necessary working space for the carrying out of such work as is described in the items. Rates are to include, in addition to the extra excavation, for any additional risk of collapse so incurred and for filling back and compacting the excavated material.

No separate item for working space is provided or will be considered where the face of the measured excavation is 750mm or more away from the finished face of the structure. Separate items for working space for the building of brick foundation walls on ordinary concrete wall footings will not be considered.

In the case of column base and pile cap excavations, where the dimensions between the column face and the excavation face is less than 500mm, working space has been measured for the width of the column face from the commencing level of excavation to the top of the column base or pile cap only where the top of the column base or pile cap exceeds 1.5m below the commencing level of excavation.

RISK OF COLLAPSE: — The Contractor shall maintain all excavated faces affecting the safety of the works and workmen. He must either provide all necessary temporary planking, strutting or shoring to all vertical excavated faces or carry the risk of collapse of these faces with all its implications. He must assume full responsibility in this connection and must allow in his rates accordingly. In addition, all excavated faces exceeding 1.5m deep are to be maintained in accordance with Government Regulations.

Quantities reflect the total superficial areas of the vertical excavated faces and will be subject to variation only in so far as these areas may vary, notwithstanding whether any temporary supports are used or not.

FILLING, ETC.: — All backfilling and filling under floors and paving must be of selected material from the excavations, unless otherwise stated, returned and compacted in layers as later described and with the top surface dressed to the correct levels and grades, all to the approval of the Department. Under no circumstances will the Contractor be allowed to use clay, peat or other unsuitable material for filling.

Rates for all items of filling with material from the excavations are to include haulage not exceeding 100m from the perimeter of the excavations.

Any filling supplied by the Contractor is to be of suitable material approved by the Department.

COMPACTION OF FILLING ETC.: — All filling and backfilling is to be done in layers not exceeding 200mm thick before compaction, with the layers level to ensure uniform compaction. Each layer is to be thoroughly compacted over the whole of the area to a dry density not less than 90% of Mod. A.A.S.H.O. density. The surface of each compacted layer shall be uniform and tightly bonded. Care is to be taken that no damage is done to foundation walls, drains and other services.

The densities of compaction referred to are to be determined by tests carried out in accordance with A.S.T.M. Designation D 1557-58 and at an optimum moisture content of not more or less than 5% of the required Mod. A.A.S.H.O. The Contractor shall be responsible for having sufficient tests taken of the density of the compacted filling to ensure that the required compaction is being attained to the satisfaction of the Department. These tests are to be undertaken by an independent testing authority nominated by the Contractor to the approval of the Department. The costs of all tests in this connection shall be borne by the Contractor and shall be allowed for in his rates.

PROTECTION AGAINST SUBTERRANEAN WOOD-DESTROYING TERMITES: — Where protection against termites is to be provided: —

a) Remove vegetable matter
All dead roots and other vegetable matter likely to encourage termites must be removed from the ground under, against the building and from all filling material.

b) Treating the ground
The ground under surface beds, and below suspended wood floors, must be treated by the application of Soil Insecticides of Chlordane or Aldrin types complying with SANS Specifications 1165 and 1164 respectively, mixed with water and applied at the rate of not less than *5* litres of solution per square metre uniformly over the whole surface. The concentration of the solution must be strictly in accordance with the manufacturer's instructions and to the approval of the Department.

The Department reserves the right to take samples of the diluted solution, at any time, in order to test the concentration of the chemicals used.

Where the ground to be treated is of earth filling, the upper 50mm layer of filling must be levelled by raking, but must not be rammed until after the solution has been applied, and where of natural ground, it must be loosened to a depth of not less than 50mm and similarly levelled, in order to enable the solution to penetrate into the soil. After the solution has been applied and allowed to penetrate the surface, the soil must be well rammed and consolidated.

Before applying the solution to the ground under the floors, splay back earth for a depth and width of 75mm from the internal faces of walls enclosing the floors, against internal walls, sleeper piers, etc. and thoroughly saturate with the solution. After the solution has soaked into the earth, the splayed grooves must be filled with earth and consolidated.

The treated layer of soil under suspended wood floors must be protected with a 75mm thick layer of approved clean gravel, finished to an even surface.

The treated layer of soil under concrete surface beds must be protected with a 25mm thick layer of well-consolidated approved grit prior to laying the waterproofing membrane.

Great care must be taken when laying concrete surface beds, protective layers, etc. in order to avoid rupturing the treated layer of soil. Should the treated layer be ruptured at any

point it must be made good and the area affected re-treated with the soil insecticide.

Contractors are advised that:

a. Special precautions must be taken to protect the workmen whilst using the soil insecticide.
b. The treatment of filling or ground under floors shall be done as soon as practicable, so that treatment may dry out before the floors are laid.
c. The treatment of the ground must be carried out under the supervision of the Department.
d. The soil insecticide to be delivered to the site in sealed drums clearly labelled or stamped with the name of the product.
e. In addition to the foregoing the application of the soil insecticide to be carried out in accordance with SANS Code of Practice 0124 — the application of Certain Soil Insecticides for the Protection of Buildings.
f. The protective layers of gravel or grit have been measured separately.

RE-USE OF EXCAVATED MATERIAL: — Material of any kind that may be discovered on the site during the excavation shall remain the property of the Administration. Such material may, if approved, be used for aggregate. Material so used shall be valued and the value deducted from the Contract Sum.

DEMOLITIONS: — The Contractor is referred to the preambles for “Alterations” insofar as they apply and the following: —

The demolition of existing buildings is to be done in a practical and safe manner, under the continuous supervision of a competent Foreman. Rates for the demolition of existing buildings are to include for breaking up and removing all external screen walls, steps and ramps, surface water channels, rainwater sumps, gulleys, etc. and grubbing up and removing all foundation walls and footings, disconnecting and removing all services to a point not less than 1m beyond the perimeter of the buildings, plugging off ends of all remaining pipes, and for filling in all holes with clean earth and ramming up to ground level. All movable fittings and furniture, fire extinguishers and electrical and other equipment in the buildings to be demolished are to remain the property of and will be removed by the Administration prior to the commencement of the demolition.

Before commencing the demolitions, the Contractor shall comply with any Local Authority regulations in force in respect of rodent extermination, etc. and he shall obtain the required Clearance Certificate. Items to cover the cost of obtaining the certificate and the fumigation, etc. of the buildings to be demolished have been provided elsewhere in the Bills of Quantities, and the fumigation is to be carried out by a firm specialising in this type of work. The fumigation of the buildings to be demolished shall only be carried out if called for by the Local Authorities and if not required the value of the relevant items in the Bills of Quantities will be deducted from the Contract Sum.

After handing over the site to the Contractor, the risk of any loss or damage to the buildings to be demolished and the materials therein, caused by theft, vandalism, etc. shall be the responsibility of the Contractor and he shall take such precautions as he deems necessary against such loss or damage.

GRASS PLANTING AND TURFING: — Is to be “Cape Kweek” or “Umgeni” grass scientifically known as *Cynodon dactylon* or other local fine grass approved by the Department. In areas where fine grass does not grow readily, Kikuyu grass *Pennisetum clandestinum* may be substituted. The areas must be identified and the approval of the Department obtained before Kikuyu grass is to be planted.

Grass Planting To Level Areas: — The areas to receive grass are to be weeded and raked free of stones and other superfluous matter and all depressions left by the earthworks plant are to be filled in with approved topsoil. The planting of grass is to be carried out in continuous root planting in rows 200mm apart. The method of planting called “sprigging” may be used as an alternative.

Immediately after completion of each strip or square, the area thus grassed is to be thoroughly watered and lightly rolled. Any drifting or piling up of the top soil due to wind or any other cause must be prevented as far as possible and should such piling up of soil against newly planted grass occur the soil must immediately be raked level and lightly rolled.

Turfing: — Banks are to be carefully trimmed to an even surface and weeded and raked free of stones, etc. and all depressions filled in with approved topsoil as before described. Turfing of banks is to be carried out with 25mm thick maximum 500mm x 1000mm weed-free grass sods, of grass as before described, and as approved by the Department. The grass sods are to be set in position in horizontal rows to broken bond and closely fitted together and tamped flat with a timber pummel, a maximum of two sods in every square metre of area covered being staked to the bank to maintain position, with and including one sharpened wood or bamboo skewer 250mm long and with all cavities between sods filled in with approved top soil and the whole area lightly top soil dressed on completion.

Established Lawn: — The use of established lawn in pieces size approximately 500mm x 1000mm x 25mm thick in lieu of grass sods on banks will be permitted provided that the established lawn is supplied and laid by a firm experienced in this type of work and to the approval of the Department. The fitting, tamping, staking and top dressing must all be as described for turfing, except that one piece per square metre is required to be staked as described.

Fertilizer: — An approved fertilizer of the following types— Type 2:3:2 for grass planted levelled areas and Type 3:2:1 for turfed or established lawn covered banks is to be supplied and applied by the Contractor at the rate of 400 kg per hectare. In the case of grass planted levelled areas the fertilizer is to be applied either before or after grass planting and in the case of turfed or established lawn covered banks the fertilizer is to be applied after the sods or pieces have been laid.

The fertilizer above described is to in addition to any fertilizer which may have been specified to be applied during either the operation of scarifying and grading the area to be grassed or the re-spreading of top soil.

A sample of the existing topsoil or the topsoil to be re-spread is to be sent to an approved fertilizer manufacturer for testing and advice on the acid or alkaline content of the soil. The cost of this test is to be borne by the Contractor if this is not provided free by the fertilizer manufacturer.

The requisite quantities of limestone ammonium nitrate for acidic soil or ammonium sulphate for alkaline soil as determined by the soil test will be supplied to the Contractor by the Department and the cost thereof is to be included in a Provisional Sum elsewhere in the Bills of Quantities. The application of this treatment is to be undertaken by the Contractor and his rates for grassing, etc. must include for same.

Weed killer: — “Weed Master or Turf Master” or other approved weed killer is to be applied to the entire grassed or turfed areas at a rate of 4 litres mixed with 200 litres of water per hectare, this being equivalent to 40-45 millilitres mixed with 5 litres of water per fifty square metres. The solution is to be sprayed on with a suitable spraying apparatus to achieve an even distribution. Six to eight weeks later, the operation is to be repeated. The application of weed killer is not to take place during wet weather. Weather conditions should be such as to allow a minimum of two hours or absorption before the likelihood of rain.

Watering and Rolling: — The entire turfed area is to be kept clear of weeds, lightly rolled and thoroughly watered throughout the period of the Contract and or at least three months from the time of acceptance of the grounds or until the grassing or turfing is well established if that is sooner, all to the satisfaction of the Department.

In the absence of rain, the initial watering of grassed or turfed areas is to be carried out as follows: —

Grass planted levelled areas: - at least twice a week.
Established lawn areas: - at least once a week.
Turfed areas: - at least once a day for the first ten to fourteen days, thereafter at least once a week.

The Contractor must allow in his rates for providing and removing at completion all necessary temporary water piping complete with fittings, sprinklers, hoses, etc. as required for the proper watering of the grassed or turfed areas of the plateaux and banks.

Cutting of Grass: — The Contractor must commence mowing as soon as possible once turfed areas have become established and undertake regular mowing at approximately one-week intervals up to the date of final delivery, except that, during the maintenance period, the mowing of the plateaux will be undertaken by the Institution.

Note: — All stages of grass planting and turfing are to be supervised on a full time basis by a competent person with the necessary experience and knowledge.

It shall be the responsibility of the Contractor to advise the Department when the following operations are to be carried out in order that his representative may be present: —

a) the application of fertilizer
b) the application of weed killer.

Should the Contractor fail to do so, the Department shall have the right to instruct the Contractor to repeat the operation at his own expense.

3. CONCRETE, FORMWORK AND REINFORCEMENT

GENERAL: — This specification applies to concrete work formed into its final shape and position in-situ.

All concrete and formwork shall be carried out in accordance with SANS Specification 1200 G — Concrete (Structural) (a copy of which the Contractor will be required to keep on the site so that it can be referred to at all times during the Contract), with the following amplifications and amendments: —

INTERPRETATIONS: — Clauses 2.1 and 2.2 of SANS Specification 1200G refer. This preamble, together with any other supplementary preambles appearing in these Bills of Quantities shall be deemed to be the project specification and are the “Portion 2” referred to in Clause 2.2.

DEFINITIONS: — Clause 2.3 of SANS Specification 1200 G refers. All references to the Engineer shall be deemed to mean the Department.

MATERIALS
Cement: —unless otherwise specified, shall be one or more of the following and shall, in each case, comply with the requirements of the relevant standard specification: —
Portland cement and rapid-hardening cement to SANS 471 Specification
Portland blast-furnace cement to SANS Specification 626.
Portland cement 15 to SANS Specification 831.
Nevertheless, no cement other than ordinary Portland cement shall be used without the approval of the Department. Cement containing more than 15% blast-furnace slag will not be permitted in columns or in members less than 50mm thick.

In addition (for the abovementioned items) where Ordinary Portland cement is used, blast-furnace slag (from separate containers) **must not** be added in any proportion whatsoever.

No mixing of two different types of cement in the same batch will be allowed, and unless otherwise approved by the Department, the same brand and type shall be used in all exposed concrete.

Lumpy cement, broken sacks and sweepings shall not be used.

Cement supplied in sacks shall be used in the order in which it was delivered and shall not be kept in storage for longer than six (6) weeks without the approval of the Department.

Water: — Shall be clean and free from injurious amounts of acids, alkalis, sugar, organic matter and other substances that could impair the strength or durability of the concrete. If so required by the Department, the suitability of the water shall be proved by tests carried out by an approved laboratory.

Aggregates: — Unless otherwise specified both the coarse aggregate (stone) and the fine aggregate (sand) shall comply with the requirements of SANS Specification 1083. The Contractor is to prove compliance by means of either a certificate from the supplier or by grading analysis tests.

Admixtures: — i.e. materials other than cement, aggregate and water shall not be used in the concrete mix without the approval of the Department. The onus for proof of satisfaction to the Department for any admixture proposed shall be with Contractor.

Reinforcement: — for concrete shall be as specified and shall, in each case, comply with one of the following: —

a) Type A hot rolled mild steel bars of plain round cross section to SANS Specification 920
b) Type C Class 2 hot rolled high yield stress Grade 1 deformed bars to SANS Specification 920
c) Type D Grade 1 cold worked deformed bars to SANS Specification 920.
d) Welded steel fabric to SANS Specification 1024 manufactured from plain hard-drawn mild steel wire.

A sample reinforcing rod, approximately 600mm long, may be taken from each consignment of rods of similar diameter, for testing. If any sample is found unsatisfactory the whole consignment of rods from which the sample was taken will be rejected.

No substitution of the bars specified shall be made without the prior approval of the Department.

REINFORCEMENT

Bending: — Reinforcing bars shall be cut and bent according to the dimensions shown on the working drawings and in accordance with SANS Specification 82.

Except as allowed for below, all bars shall be bent cold and bending shall be done slowly, a steady even pressure being used without jerk or impact.

If approved by the Department, hot bending of bars of diameter at least 32mm shall be permitted, provided that the bars do not depend for their strength on cold working. When hot bending is approved, the bars shall be heated slowly to a cherry red heat (not above 840 C^{o}) and after bending shall be allowed to cool slowly in air. Quenching with water shall not be permitted.

Fixing: — All steel reinforcement, at the time of placing of the concrete, must be free from loose rust, scale, oil and other agents which will reduce the bond between the steel and the concrete or initiate corrosion of the reinforcement. Reinforcement exposed to sea spray shall be washed down, and the formwork drained, just prior to concreting.

Reinforcement shall be positioned as shown on the working drawings or as directed by the Department and maintained in those positions within the tolerances given in the Specification for Tolerances. It shall be secured against displacement by tying at intersections with 1.6 or 1.25mm diameter annealed wire or by the use of suitable clips or, if permitted by the Department, by welding in accordance with SANS 1856. Welding will not

be permitted on cold worked bars. Reinforcement shall be supported in its correct position by hangers, saddles or cover blocks and aligned by chairs and spacers all of approved design and material. Where such hangers, saddles, chairs or spacers are of steel, they will be detailed on the drawings or in bending schedules.

Cover: —The minimum cover of concrete over reinforcement, excluding any applied finish, shall be as shown on the working drawings, or as directed by the Department.

Cover shall be maintained by using cover blocks, which shall be made of small aggregate concrete, not mortar, using the same cement and aggregate type and ratio as the parent concrete. Alternatively, cover blocks may be of the plastic type provided that sufficient number are used to prevent their collapse, that they are of a colour compatible with that of concrete and that the prior approval of the Department is given. Metal cover blocks shall not be used.

If the concrete face has a Class F2 smooth finish or some other special finish as is described elsewhere, hemispherical or pyramid shaped concrete cover blocks shall be used unless otherwise specifically approved by the Department.

Splicing: — or joining of reinforcing bars shall be made only as and where shown on the working drawings or as otherwise approved. The length of the overlap in a splice shall be not less than that shown on the working drawings or forty-five times the diameter of the bar if not shown.

Protection of Exposed Bars: — If left exposed for future bonding of extensions to the works, reinforcement shall be protected from corrosion as specified by the Department.

Electric Current: — Reinforcement shall not be used as a means for conducting electric current unless there is conformity with the requirements of SANS Code of Practice 03.

Inspection of Reinforcement: — Reinforcement shall be subject to inspection by the Department after the Contractor is satisfied that it has been completely and correctly fixed. The amount of notice given by the Contractor to the Department before concreting commences that reinforcement is ready for his inspection shall be agreed between the Department and the Contractor at the commencement of the Contract.

FORM WORK

Design: — Formwork shall be so designed and constructed by the Contractor that the concrete can be properly placed and compacted and that the required shapes, finishes, positions, levels and dimensions shown on the working drawings are maintained, subject to the tolerances given in the Specification for Tolerances. Unless otherwise directed by the Department, all formwork to beams and slabs shall be evenly cambered, unless otherwise specified or shown on the drawings, to the mid-point of the span of the member at the rate of 2mm per metre of span, all to the approval of the Department and the full cross section of the member shall be maintained after placing of concrete.

The formwork and joints shall be capable of resisting the dead load and pressure of the wet concrete, effect of vibration equipment, wind forces and all other superimposed loads and forces it is necessary for it to carry.

Should it be necessary to support formwork off suspended or ground bearing slabs, the manner of execution of the support shall be agreed with the Department so that overstress of, or damage to, those members is prevented.

In structures having, in whole or part, two or more reinforced concrete floors, props to the approval of the Department shall be provided under the soffits of beams and slabs of any floor which is being used to support the formwork and new concrete of the floor above. These props shall not be removed until the formwork for the new concrete has been struck.

Wedges and clamps shall be used in preference to nails. Joints in forms shall be tight enough to prevent leakage of cement paste.

Finish: — The quality of the finished surface of the concrete shall be as shown on the working drawings or as otherwise specified, and the type of formwork used shall be adequate to provide such finishes.

Ties: — The type of ties used and their position shall be such that the finish required in terms of the clause “Finish” is achieved. Tie rods are preferable to wire ties and the forms shall not be secured to the reinforcement. No corrodible tie rod or wire tie shall be allowed within the depth of concrete cover, and in the case of water-retaining or tanked structures, no removable tie rod or wire shall pass right through the concrete member.

Preparation of Formwork: — Surfaces that are to be in contact with fresh (wet) concrete shall be so treated by coating with a non-staining mineral oil or other approved material, or, in the case of timber forms, by thoroughly wetting surfaces so as to ensure easy release and non-adhesion to formwork during stripping. If any substance other than water is used, every precaution shall be taken to avoid contamination of the reinforcement.

Re-use of Formwork: — Before re-use, all formwork shall be reconditioned, and all form surfaces that are to be in contact with the concrete shall be thoroughly cleaned without unduly damaging the surfaces of the formwork.

Openings: — Where necessary for the proper placing of the concrete, temporary openings for cleaning, inspection or placing purposes shall be provided, taking cognisance of the finishes specified.

Removal of Formwork: — Formwork shall not be removed before the concrete has attained sufficient strength to support its own mass and any loads that may be imposed on it. Except where the Contractor can prove by means of cube tests, at his own expense to the satisfaction of the Department that, because of its strength development characteristics the concrete has attained sufficient strength and that shorter periods are practicable, formwork shall not be removed within shorter periods than those given in Table A. The number of cube tests required shall be equal to the number required for testing at 28 days. Where full design loads are carried, no soffit forms and props may be removed until the full design strength is attained.

In structures having, in whole or part, two or more reinforced concrete floors, props to the approval of the Department shall be provided under the soffits of beams and slabs of any floor which is being used to support the formwork and concrete of the new floor above. These props shall not be removed until the formwork for the new concrete has been struck.

All formwork props shall have been removed from under beams and slabs before the commencement of construction of brickwork thereon, unless otherwise agreed with the Department. Formwork shall be removed carefully so that shock and damage to the concrete are avoided.

TABLE A—REMOVAL OF FORMWORK (MINIMUM TIMES IN DAYS (24 hrs))

1	2	3	4	5	6	7	8	9	10
Type of structural member or formwork	Type of cement used								
	Portland cement and Portland cement 15			Rapid-hardening Portland cement* and rapid-hardening Portland cement 15			Portland blast-furnace cement		
				Weather					
	Hot or normal	Cool	Cold	Hot or normal	Cool	Cold	Hot or normal	Cool	Cold
(a) Beam sides, walls, and unloaded columns.	0,75	+	1,5	0,5	+	1	2	+	4
(b) Slabs with props left underneath	4	+	7	2	+	4	6	+	10
(c) Beam soffits with props left underneath, and ribs of a ribbed floor construction	7	+	12	3	+	5	10	+	17
(d) Slab props including cantilevers	10	+	17	5	+	9	10	+	17
(e) Beam props including cantilevers	14	+	21	7	+	12	14	+	21

* Shorter periods may be used for sections of thickness 300mm or more.
+ In cool weather, stripping times shall be determined by interpolation between the periods specified for normal and cold weather.

CONCRETE QUALITY

General: — Concrete shall comply with the requirements for “Strength Concrete” as specified. The type of aggregate and cement, and their sources of supply, shall not be altered during the currency of the Contract without the prior written agreement of or instruction from the Department.

Strength Concrete: — The Contractor shall be responsible for the design of the concrete mix and for the proportions of its constituent materials, measured as described, necessary to produce concrete that complies with the requirements specified by the Department thus:-

a) For each section of the work, the class of concrete and position on the Works, as shown on the drawings:
b) For each class of concrete:
   i) the minimum compressive strength at 28 days as shown in Table B
   ii) the maximum nominal size of coarse aggregate as shown in Table B

iii) the stump as shown in Table D
iv) the maximum cement/water ratios as shown in Table C.

At the earliest possible stage in the Contract, at least 35 (thirty-five) days before the first concrete is placed, or as otherwise agreed with the Department, the Contractor shall submit samples of the aggregates which he proposes to use on the works to the Department.

The Contractor, under the supervision of the Department, shall prepare trial mixes using these same aggregates, to establish his ability to achieve the strengths specified, and satisfactory workability of the concrete. The Contractor shall provide all necessary equipment for, and carry out tests of moisture content of aggregates at the time of preparation of the trial mixes, tests of the slump of the mixes and at the same time cast not less than six standard cubes from each mix for compression tests.

The target strengths to be achieved under trial mix procedure shall exceed the specified minimum compressive strengths by a factor which is acceptable to the Department.

The Contractor shall also, when required to do so, prove the concrete yield obtained per sack of cement by suitable measurement of batches after placing.

No structural concrete work shall be poured until trial mix procedure has been properly followed and satisfactory 7 (seven) day compression strengths achieved. (Equivalent 28 (twenty-eight) day strength = 4/3 x 7 day strength + 5 MPA).

Thereafter, the materials, preparation of and method of manufacture of subsequent concrete shall conform accurately to those used in the trial mixes. If materials vary in the course of the Contract from the samples first submitted, the Contractor shall, on the instructions of the Department, repeat the trial mix procedure and vary the proportions to attain the specified qualities.

The costs of preparation of trial mixes, with tests associated with them, shall be borne by the Contractor and must be allowed for in the pricing of the concrete.

A valid concrete test result shall be the average obtained from the testing of three test cubes of concrete in accordance with SANS Method 863.

TABLE B—CONCRETE CLASSES: STRENGTH, AGGREGATE SIZE AND COMPACTION

Class	Minimum 28 day cube compressive strength (MPA)	Maximum nominal size of coarse aggregate (mm)	Method of Compaction
50/26 50/19	50	26,5 19,0	Mechanical (see clause "Compaction")
45/26 45/19	45	26,5 19,0	
40/26 40/19	40	26.5 19,0	
35/26 35/19	35	26,5 19,0	
30/37 30/26 30/19 30/13	30	375 26,5 19,0 13,2	
25/37 25/26 25/19 25/13	25	37,5 26,5 19,0 13.2	
20/37 20/26 20/19 20/13	20	37,5 26,5 19,0 13,2	
15/37 15/26 15/19	15	37,5 26,5 19,0	Non-mechanical (See clause "Compaction")
10/37 10/26 10/19	10	37,5 26,5 19,0	

The Contractor shall be deemed to have satisfied himself, before tendering, of his ability to produce concrete of the required quality with available materials conforming to the specification, and mixed in the proportions on which his tendered rates are based. Any subsequent alterations of the mix proportions to meet these requirements shall be at the Contractors expense.

If, in the opinion of the Department, the concrete proportions are likely to lead to excessive segregation, honeycombing, bleeding or shrinkage cracking, he shall have the right to order the Contractor to amend the proportions at the Contractors own cost.

TABLE C — MAXIMUM CEMENT / WATER RATIOS FOR DIFFERENT CONDITIONS OF EXPOSURE

1	2	3	4	5
Type of structure	**Exposure Conditions**			
	Mild	**Moderate**	**Severe**	**Very Severe**
Thin sections; reinforced piles; all sections with less than 25mm cover reinforcement.	*	0.53	0.48	0.40
Moderate sections; retaining walls, piers, beams	*	*	0.53	0.43
Exterior portions of mass concrete	*	*	0.53	0.43
Concrete slabs laid on ground	*	0.53	0.48	*
Concrete protected from the weather, inside buildings, or in ground below frost level	*	*		*

* In these cases the ratio will be based on the strength for the workability desired.

Consistency and Workability: — Slump measurements taken in accordance with SANS Method 862 shall be within the limits given in Table D appropriate to the type of construction, or within such other limits as are laid down by the Department.

The concrete shall be of such workability that it can readily be compacted into the corners of the formwork and around reinforcement without segregation of the materials or excessive “bleeding” of free water at the surface.

TABLE D—SLUMP LIMITS

1	2	3	4	5
Type of construction	Slump, mm			
	Non-mechanical compaction		Mechanical compaction	
	Max.	mm.	Max.	mm.
Paving and pre-cast units	75	50	50	30
Heavy mass construction	75	25	50	20
Reinforcing foundation walls and footings	125	50	80	30
Slabs, beams, columns, and reinforced walls	125	50	80	30
Slabs and industrial floors on ground	125	75	80	50
Plain footings, caissons, and substructure walls	100	25	60	20

Ready-mixed Concrete: — This may be used subject to the approval of the Department. This approval may be withdrawn on 24 (twenty-four) hours notice to the Contractor if at any time if documents do not conform to the requirements of this Specification. Ready-mixed concrete shall also comply with the requirements of SANS Specification 878. Details of the

mix ingredients and tests thereon, the mix designs and relevant tests shall be forwarded to the Department for his approval. Ready-mixed concrete shall be cast within 3 (three) hours of placing all the ingredients in the mixing plant. Ready-mixed concrete shall be subject to the same sampling and testing at the site as that mixed on site and only the results of these tests will be regarded as valid.

TRANSPORTATION AND PLACING

Transportation: — Unless agreed with the Department, concrete shall not be pumped into its final position.

The Contractor must provide suitable runways for the distribution of concrete to the various parts of the structure and these must be solidly constructed in such a manner so as to obviate the possibility of interference with the steel reinforcement.

Placing: — Unless otherwise agreed with the Department, the Contractor shall give the Department at least 24 (twenty-four) hours notice of his intention to place concrete. No concrete shall be placed without the prior approval of the Department and without a representative of the Department being present. Concrete shall be placed within one hour of the time of its discharge from the mixer. Concrete shall not be re-tempered by the addition of water or other material. The forms to be filled shall be clean internally. All excavations and other surfaces of an absorbent nature that are to come into contact with the concrete shall be dampened with water. There shall be no free-water on the surface against which concrete is to be placed. Wherever possible, the concrete shall be deposited directly into its final position to avoid segregation and displacement of reinforcement and other items that are to be embedded. Deposited concrete shall not be so worked (whether by means of vibrators or otherwise) as to cause it to flow laterally in such a way that segregation occurs. Where possible, the concrete shall be brought up in horizontal layers of compacted thickness not exceeding 450mm and heaping shall be avoided.

Where a chute is used to convey the concrete, its slope shall be such as will not cause segregation, and a suitable spout or baffles shall be provided for the discharge of the concrete. Concrete shall not be allowed to fall freely through a height of more than 3 m, unless otherwise approved. Concrete shall not be placed during periods of heavy or prolonged rainfall.

Compaction: — The concrete shall be fully compacted by approved means during and immediately after placing. It shall be thoroughly worked against the formwork and around reinforcement and other embedded fittings without displacing them.

The concrete shall be free of honeycombing and planes of weakness. Successive layers of the same lift shall be thoroughly worked together.

The method of compaction shall be as specified. Mechanical compaction shall be undertaken by means of high frequency immersion vibrators of minimum frequency of 6000 vibrations per minute and a maximum acceleration of 4 g when under load, being capable of visibly affecting concrete over a radius of at least 500mm. Vibrators shall be inserted at about 500mm centres and withdrawn slowly to close the hole formed by the vibrator.

Non-mechanical compaction shall be undertaken by means of spading, rodding or forking.

Over-compaction resulting in segregation, surface laitance or leakage (or any combination of these) shall not be allowed.

Vibrators shall not be allowed to come within 30mm of the face of the formwork in the case of formed finishes, nor within 75mm of the face of the formwork in the case of special finishes.

Construction Joints: — Concreting shall be carried out continuously up to the construction joints shown on the working drawings or as prior approved by the Department, except that

if, because of an emergency (such as a breakdown of the mixing plant or the occurrence of unsuitable weather), concreting has to be interrupted a construction joint shall be formed at the place of stoppage in conformity with the detail shown on the drawings for construction joints generally and in the manner which will least impair the durability, appearance and proper functioning of the concrete. The Department shall approve the method adopted for forming the construction joints, one of the following methods being adopted, as relevant: —

a) Construction joints when concrete is not more than 24h old: —The surface of the concrete shall be brushed with a steel wire brush before new mortar and concrete are placed as specified in (b) below.
b) Construction joints when concrete is more than 24h but not more than 3 days old: — The surface of the concrete shall be sand-blasted or chipped with a light hammer, swept clean, and thoroughly wetted and covered with a 10mm thick layer of mortar composed of cement and sand mixed in the same ratio as the cement and sand in the concrete mixture. This mortar shall be freshly mixed and placed immediately before the new concrete is placed.
c) Construction joints when concrete is more than 3 days old: — The procedure specified in (b) above shall be followed, except that the old surface shall be prepared and kept continuously wet for at least 24h before the mortar and new concrete are placed.
d) Construction joints at tops of columns: — The procedure for brushing or cleaning specified in (a) or (b) above, as applicable, shall be followed before the steel reinforcement of the slab or floor to be cast on the columns is placed in position.

Curing and protection: — Formwork shall be retained in position for the appropriate period given in the clause “Removal of Formwork” and shall be considered as providing adequate curing on those surfaces for that period. Should this curing period still be less than that specified, alternatively, should surfaces not be cured by forms then all such concrete shall immediately be protected from contamination and loss of moisture by one or more of the following methods: —

a) ponding the exposed surfaces by means of water, except where atmospheric temperatures are low, i.e., less than 2°C,
b) covering the concrete with sand, or mats made of a moisture-retaining material, and keeping the covering continuously wet;
c) continuous spraying of the exposed surfaces with water;
d) covering with a waterproof or plastic sheeting firmly anchored at the edges,
e) using a prior approved curing compound applied in accordance with the manufacturer’s instructions, provided that in this case, the presence of the compound is not detrimental to subsequently applied finishes.

Whatever method of curing is adopted, its application shall not cause staining, contamination, or marring of the surface of the concrete.

The curing period shall be at least 5 days for concrete made with Portland cement, at least 2 days for that made with rapid-hardening Portland cement and at least 7 days if Portland blast-furnace cement is used. When atmospheric temperatures are below 5° C these minimum curing periods shall be extended by 72, 36 and 72 hours respectively.

CONSTRUCTION DETAILS

Holes, Chases and Fixing Blocks: — No holes or chases other than those shown on the working drawings or approved by the Department shall be cut or otherwise formed in the concrete. No blocks for the attachment of fixtures shall be embedded in the concrete unless approved by the Department.

Pipes and Conduits: — No pipes or conduits other than those shown on the working drawings shall be embedded in the concrete without the approval of the Department. The clear space between any such pipes and the clear distance between such-a pipe and any reinforcement shall be at least 25mm or the maximum size of the coarse aggregate plus 5mm, whichever is greater. The amount of concrete cover over pipes and fittings shall be at least 25mm.

Honeycombing and Other Defects: — After removal of the forms, if the concrete shows any defect in terms of the Specification for Finishes for that concrete, the Contractor shall, on the instructions of the Department, make good the defect at his own cost, by either removing and replacing the defective concrete, or by patching, all as approved by the Department and to the standard of finish required. No remedial work shall be carried out by the Contractor without the prior approval of the Department.

Building on Concrete Footings: — No structural load shall be imposed on concrete footings until at least three days after depositing the concrete in the case of mass concrete footings and after seven days in the case of reinforced concrete footings, or as may be directed by the Department.

RECORDS: —The Contractor shall maintain written records indicating: —

a) the date on which each section was concreted, the time taken to place the concrete, and the position of that section in the Works and its construction joints;
b) daily weather conditions with temperatures being recorded by maximum and minimum thermometers and
c) the nature of samples and dates on which they were taken. In the case of cubes these shall also state the identification marks, test results and age, minimum strength required and position of parent concrete.

TESTS

Compressive Strength: — During the time in which each class of concrete, having a specified 28 day compressive strength equal to or greater than 20 MPA, is being placed, samples of the concrete shall be taken from the point of deposit at the rate of at least one sample from each 5m³ of concrete placed in columns, and from each 30 m³ or part thereof of concrete placed elsewhere, but in either case, nevertheless at least once a week. A group of at least three 150mm test cubes shall be made from each sample for testing at 28 days age. If the Contractor plans to execute further work which relies on previously completed work for support but for which the results of 28 day tests are not available, he is to prove the strength of that concrete by taking and testing at 7 days age an equal number of test cubes to that which is to be tested at 28 days age, prior to the commencement of the planned further work.

The cost of the necessary extra test cubes and testing will be for the Contractor's account. Each group of test cubes shall be deemed to represent the whole of the concrete from which sample was taken and shall be identifiable with the concrete.

The Contractor shall provide, at his own expense, sufficient moulds to keep pace with the rate of concreting. He shall also perform all tasks in respect of compressive strength testing except the actual crushing.

If ready-mixed concrete is used, site testing as specified herein shall still be undertaken, and only the results of such site testing shall be considered in determining the acceptance or otherwise of the concrete.

Grading Analysis: — If so directed by the Department, a grading analysis shall be made for each 40m³ of fine aggregate to be used and for each *75* m³ of the coarse aggregate to be used. The analysis shall be made by the method given in SANS Specification 1083.

Determination of Consistency: — When the slump test is used to measure the consistency of the concrete mix, it shall be carried out by the method given in SANS Method 862 with samples taken in accordance with SANS Method 861.

Costs of Tests: — to concrete, trial mixes, cement, aggregates, water and reinforcing steel shall be borne by the Contractor. The Contractor shall also bear the costs of any other tests (including load tests), which are required as a result of failure on the part of the Contractor to meet the requirements of the Specification.

An item against which the Contractor may allow for all costs in connection with tests on concrete cubes has been included elsewhere in these Bills of Quantities.

Testing Authority: — The crushing of cubes and testing of other samples except in the case of the clause "Determination of Consistency" shall be undertaken by an independent Authority as approved by the Department. The Contractor shall arrange with the Authority that copies of the results of all tests are sent direct to the Department.

ACCEPTANCE CRITERIA FOR STRENGTH OF CONCRETE: — Should any test result obtained from a set of three test cubes of concrete of a specific grade that have been made and tested as specified show that the strength is more than 3 MPA below the specified strength, the concrete represented by such results shall be deemed to have failed to meet the Specification. Should an examination carried out in terms of the clause "Procedure in the event of failure" satisfy the Department that the structural adequacy and durability of that part of the structure where the concrete concerned has been used, is not impaired, the concrete will be acceptable. The Contractor will however be required to review the mix design and any other factors influencing the quality to ensure that further concrete is acceptable.

Where three or more consecutive valid test results (i.e., results of sets of three test cubes that have been made and tested as specified) become available, the following criteria shall apply: —

a) The average of any three consecutive valid test results obtained on concrete of a specific grade must exceed the specified strength by at least 2 MPA.
b) If the criterion given in (a) above is not met but the average is at least equal to the specified strength, the concrete cast will be acceptable but the Contractor will be required to adjust the mix design and standard of control.
c) Should the average result be less than the specified strength, an examination must be carried out in terms of the clause "Procedure in the event of failure" on that part of the structure in which concrete represented by the result has been used.

Alternatively, should a concreting operation be of such size or the testing be of such frequency that thirty or more valid test results (i.e., results of sets of three test cubes that have been made and tested as specified) become available within three months, the Contractor may choose, subject to the approval of the Department, to have the results assessed statistically. In such a case, the average of all the test results of a specific trade of concrete at *any stage* must exceed the specified strength by at least 1,7 standard deviations, failing which the Contractor will be required to adjust the mix design to ensure compliance with this criterion.

PROCEDURE IN THE EVENT OF FAILURE: — If after the evaluation of the test results in terms of the clause "Acceptance criteria for strength concrete" an examination of the concrete in the structure is necessary, one or more of the following procedures in the sequence given may be adopted at the discretion of the Department, and for the account of the Contractor, to determine the acceptability or otherwise of the concrete in that particular part of the structure: —

a) An assessment of the stress level in the structure concerned in relation to the test result obtained.

b) Non-destructive testing, subject to the availability of similar concrete of proven acceptable quality in comparable members in the same construction as a reference.

c) The testing of drilled cores in accordance with the relevant SANS Standard Methods.

d) Full scale load tests in accordance with Section 6 of SANS Code of Practice 0100: Part II.

Where load tests are, in the opinion of the Department, unsuitable or impracticable, and if an examination carried out in terms of the above does not show the concrete strength

to be acceptable, or if a tested portion of the structure fails to pass the tests, the Contractor shall, on the instructions of the Department, replace or strengthen by approved means: —

a) each portion that failed or contains concrete that failed, as relevant, and
b) any other portion, irrespective of strength, the functional purpose of which is affected by the portion or concrete referred to in (a) above.

NON-STRUCTURAL PRESCRIBED MIX CONCRETE: — Concrete for non-structural purposes shall be "Prescribed mix concrete" produced in accordance with the requirements indicated in the table below, and the Contractor is also referred to the foregoing Preambles insofar as they apply: —

TABLE E – PRESCRIBED MIX CONCRETE FOR NON-STRUCTURAL PURPOSES

Class of Concrete	Estimated minimum compressive strength in MPA at 28 days	Maximum nominal size of coarse aggregate in mm	Proportion of Constituents		
			Cement (Parts)	Fine Aggregate (Parts)	Coarse Aggregate (Parts)
A	1	37,5	1	4	8
B	15	19,0	1	3	5
C	20	19,0	1	2 ½	3 ½

Cement and aggregates shall be mixed by volume and the contents of a 50 kg sack of cement shall be taken to be 0.033 m^3

The cement / water ratios and the maximum and minimum slumps for concrete shall be as previously listed in Tables C and D.

The Department shall have the right to vary the proportions of the constituents in any of the prescribed mixes as necessary to obtain the required compressive strength, optimum density and workability of the concrete. Any variation in the rates of the concrete will only be considered if the proportion of cement to the total volume of aggregate, in each case, is varied from that Specified.

Notwithstanding any requirements previously described, the Department may permit certain items of non-structural concrete in small quantities to be mixed by hand.

Where concrete is mixed by hand, the coarse aggregate shall be spread out on a timber, concrete or metal platform in a flat heap, the sand-then spread evenly over the heap, followed by the cement also spread evenly, and the whole thoroughly mixed by shovelling from the centre to the side to form a ring, then back to the centre and again to the side. Water shall then be poured into the ring and the materials mixed into it and then back into the ring, the remainder of the water then added slowly as materials are mixed into it. Mixing shall continue until the colour is uniform and the consistency the same throughout the pile.

"NO-FINES" CONCRETE: — shall consist of one part of cement to eight parts of 19mm aggregate (1:8— 19mm stone) with a water/cement ratio of approximately 0, 46. This water/cement ratio may be varied slightly to suit conditions on approval by the Department.

The quantity of water used shall be just sufficient to form a smooth grout, which shall completely coat every particle of aggregate, and also to ensure that the grout is just wet enough to form a small fillet at each point of contact between the stones. 'No-fines" concrete mixed with excessive water, which results in a thin grout which drops off the aggregate, will be rejected.

"No-fines" concrete shall be placed in its final position within 20 minutes of mixing and shall be placed in continuous horizontal layers. "No-fines" concrete shall be spade worked sufficiently to ensure that it fills the forms but vibrating, tampering or ramming will not be permitted.

BREEZE CONCRETE: — shall consists of one part cement to eight parts clean dry furnace ashes, the ashes being free from all coal or other foreign matter and graded up to particles which will pass a 26. 5mm ring from a minimum which passes a 4.75mm mesh. The finer materials from the screening to be first mixed with the cement into the mortar and the ashes added afterwards and thoroughly incorporated. The breeze concrete is to be mixed in batches not exceeding 0, 1 in 3 and each batch is to be immediately placed in position. The ashes for breeze concrete are to be obtained in an unscreened state and are to be kept dry so that sufficient fine material will be obtained from the screening to make the mortar.

FINISHES TO IN-SITU CONCRETE

Formed Finishes: — are the concrete surface finishes developed using formwork and whose standard of finish in each class shall be as described.

The Department shall be informed by the Contractor of any defect in terms of this Specification, and no remedial work shall be carried out by the Contractor without the prior approval of the Department. Any defect shall be made good at the Contractor's expense by either removing and replacing the defective concrete, or, in certain instances only, by patching, all as approved by the Department and to the standard of finish required.

Class F1 Ordinary Finish: — Formwork panels shall be of such quality that upon removal, the concrete is true and even, free from fins and recesses greater than 5mm size, honeycombing, large air holes and the like. Bolt holes shall be filled if so required by the Department.

Class F2 Smooth Finish: —This class of finish requires a high standard of concrete work, formwork and technique.

Concrete placed in any one structure to give this finish shall be made from cement and aggregates from the same source, and similarly, the grading of the aggregate shall be kept constant.

Formwork shall be metal or wrot timber in a new condition designed and constructed to suit the particular job in hand and with shutter bolts and joints between panes in a pattern approved by the Department. Joints between panels shall be watertight, but the use of sealing tape, which marks the concrete, shall not be permitted.

Construction joints shall be in the position and of the detail shown upon the working drawings. Should the Contractor wish to incorporate further construction joints or amend the position of those shown to suit his own requirements or technique, this may be allowed provided that all design considerations are met, that the prior approval of the Department is obtained and that any extra costs are borne by the Contractor. In the case of horizontal construction joints, the top edge of the concrete on the Class F2 smooth finish side is to be struck true and level with a trowel.

Special care shall be taken to ensure that forms are clean of all pieces of tying wire, nails and other debris at the time of concreting.

The standard of finish shall be such that, upon removal of the formwork, no further treatment, other than treatment of bolt holes if required shall be found necessary to provide a straight, smooth and uniform finish of good quality and consistent colour and texture, free of all honeycombing and large air holes.

UNFORMED FINISHES: — are those concrete surface finishes developed without the use of formwork -

Class U1 Ordinary Finish: — Immediately after placing, the concrete shall be finished by screeding with the edge of a wooden board of straight and true line and working between guides set accurately to level. No mortar shall be added and noticeable surface

irregularities caused by the displacement of coarse aggregate shall be made good by re-screeding after removing or tamping down the offending aggregate.

Class U2 Wood Float Finish: — The concrete surface shall first be brought to the standard Class U1 ordinary finish and then floated with a wood float. Floating shall be started as soon as the screeded finish is stiffened sufficiently and the bleed water has evaporated or been removed and it shall be the minimum necessary to produce a surface free from screed marks and uniform in texture.

Class U3 Steel Trowel Finish: — The concrete surface shall first be brought to the standard of Class U2 wood float finish with floating being continued until a small amount of mortar without excess water is brought to the surface and then when the floated surface has hardened sufficiently to prevent any more excess fine material from being drawn to the surface, troweling with a steel trowel. Troweling shall be performed with firm pressure such as will flatten the sandy texture of the floated surface and produce a dense uniform surface free from blemishes and trowel marks. Gradual surface irregularities shall not exceed 5mm over any 3m. The sprinkling of sand and/or neat cement on the surface to absorb excess moisture shall not be permitted.

Class U4 Power Float Finish: — The concrete surface shall first be brought to the standard of Class U1 ordinary finish using wooden screeding boards or steel rollers. After evaporation or removal of all bleed water and immediately the concrete is stiff enough to support the machine the surface shall be closed with a mechanical power float and then finished with a mechanical power trowel. The texture of the finished surface shall be either non-slip or polished as shown on the drawings. Irregularities shall be of long wavelength not exceeding a curvature of 2mm in 600mm. Under no circumstances shall sand and/or neat cement be sprinkled over the surface either to absorb excess moisture or to fill surface blemishes or irregularities. Power floats and trowels shall be operated by skilled operators.

TOLERANCES: — Clause 6 of SANS Specification 1200G refers. Unless otherwise agreed by the Department, 'Degree of Accuracy' shall apply to all concrete work and steel reinforcing.

SUPERVISION: — The construction of all concrete work shall, at all times, be under the supervision of a competent person experienced in the production and placing of high-grade concrete. He shall personally supervise all work relating to the concrete construction and pay special regard to: —

a) The quality, testing and mixing of materials.
b) The finish, stability and cleanliness of formwork and excavations.
c) The cleanliness, correct positioning and maintenance in position of steel reinforcement.
d) The transporting, placing, compacting and curing of the concrete. The construction and stripping of formwork.
e) The production of samples, test cubes, slump and other tests.

GENERAL

Measurement and Payment: — The provisions of Clause 8 of SANS Specification 1200G will NOT apply and the system of measurement that is adopted in these Bills of Quantities is the only system of measurement that will be recognised in this Contract.

No deductions have been made for pipes not exceeding 200mm internal diameter, reinforcement, conduits, structural steel, bolts and the like.

Rates for Concrete: — are to include for mixing, handling and depositing (by hoisting or lowering) in the forms. Rates for items of reinforced concrete are to include for thoroughly working and packing around the steel reinforcement. All reinforcement, except where otherwise described, has been measured separately.

Rates for concrete surface beds are to include for laying in suitable size panels not exceeding 20m^2 or as may be directed. The Contractor is to allow in his pricing of the concrete for all construction joints.

Striking off and Curing: — of concrete slabs and surface beds has been measured separately. The rates for all other items of concrete including stairs and landings and concrete bindings, are, except where otherwise described, to include for all necessary striking off of surfaces and curing.

The rates for items of striking off and curing top surfaces of concrete shall, unless otherwise described, apply to level surfaces.

Where exposed sloping surfaces of concrete do not exceed the limits of pitches laid down for the measurement of back shuttering, the striking off and curing of the sloping top surfaces has been measured in the case of concrete slabs and surface beds, and in other-cases provision has been made for dressing the concrete surfaces to splay.

Where items of striking off and curing are described as to falls or ramps this shall include cross-falls, etc.

The rates for striking off and curing of surface beds formed in panels must also include for all necessary temporary formwork in forming the panels.

Rates for Formwork: — are to be for use and waste only (except where described as "permanent") and are to include for fitting together in the required forms, propping, strutting, shoring, wedging, plumbing and fixing to true angles and surfaces, cambering formwork to slabs and beams where required, preparation and treatment of surfaces as necessary to ensure easy release during stripping, reconditioning as necessary before re-use, providing necessary temporary openings for the purpose of cleaning, inspection and placing of concrete, and for all straight cutting, splayed edges, intersections, notching and narrow widths, including waste and properly fitting at intersections, maintaining in position for periods as directed and for striking and removing.

Rates for items of formwork to soffits of slabs and to sides and soffits of beams, lintels and the like are to include for horsing exceeding 1,5m and not exceeding 4,5m high unless otherwise stated in the items.

Rates for formwork to soffits of stairs and landings are to include for all necessary horsing.

Rates for Permanent Formwork: — are to include for leaving in all formwork, props, etc. as permanent formwork shall be regarded as not being recoverable.

Rates for Steel Fabric Reinforcement: — are to include for lapping the reinforcement at all edges, as specified, for all cutting and waste, notching, etc. bending where required, wiring together at laps and for maintaining in position during placing of concrete.

Rates for Steel Bar Reinforcement: — are to include for all cutting, bending, hooked ends, wiring together at passing points, hoisting or lowering to the required levels, fixing in accordance with the detail drawings, cover blocks and maintaining in position during placing of concrete. The mass of mild and high yield stress steel bars shall be based on the values shown in Table El of SANS Specification 920— Appendix E (with no allowance being made for rolling margin and waste).

The mass of the binding wire required for fastening the reinforcement together is not included in the mass of the reinforcement. Provision for the cost of this wire shall be deemed to have been made by the Contractor in calculating the unit rate for the net mass (i.e. excluding the mass of binding wire) of the reinforcement.

4. BRICKWORK

SAND: — shall comply with the requirements of SANS Specification 1090, washed where necessary and screened through a 2360 micrometer mesh sieve.

CEMENT: — shall be Portland cement of normal setting quality complying with SANS

Specification 471 or Portland cement 15 complying with SANS specification 831. Cement containing more than 15 % blast furnace slag will not be permitted to be used.

LIME: — shall be hydrated lime complying with SANS Specification 523.

WATER: — shall be clean and free from injurious amounts of acids, alkalis, and other organic substances. If so required by the Department, the suitability of the water shall be proved by tests carried out by an approved laboratory.

CEMENT MORTAR: — unless otherwise described, shall be composed of one part by volume of cement to five parts by volume of sand.

COMPO MORTAR: — unless otherwise described, shall be composed of one part by volume of cement, one part by volume of lime to ten parts by volume of sand.

STRENGTH MORTAR: —where required, shall be of the class specified and as defined in Table C-l of SANS Code of Practice 0164—Part I.

MIXING OF MORTAR: — the materials are to be mixed dry on a non-absorbent and close jointed timber or iron platform until the mixture is of uniform colour with water added and the mixture turned over until the ingredients are thoroughly incorporated.

No cement mortar that has once commenced to set will be allowed to be used. Mixing platforms are to be cleaned and old mortar removed before any new batch of mortar is prepared for mixing. No mortar mixing by adding additional materials is permitted after 5 (five) hours.

TESTING OF STRENGTH MORTAR: — During the time brickwork is being laid samples shall be taken of the mortar being used as shall be directed by the Department. A group of three 70mm x 70mm x 70mm test cubes shall be made from each sample for testing at 28 days of age. Each group test cubes shall be deemed to represent the whole of the batch from which the sample was taken and shall be identifiable with the batch.

The testing shall be undertaken by an independent firm or institution nominated by the Contractor to the approval of the Department. An item for the testing of mortar cubes has been provided elsewhere in these Bills of Quantities.

BURNT CLAY COMMON BRICKS: — shall comply with SANS Specification 227 and are to be good quality, sound, hard, well burnt bricks, uniform in size and shape.

A sample load of bricks is to be approved by the Department and all subsequent loads are to be equal thereto.

BRICKS FOR FOUNDATIONS: — are to be as above but extra hard burnt bricks.
Reject facing bricks may be used in lieu of extra hard burnt foundation bricks provided they are equal to a sample to be submitted to and approved by the Department. These bricks are also to be used for septic tank walls.

BRICKWORK: —unless otherwise described is to be in burnt clay common bricks and wherever practicable is to be in stretcher bond with the skins tied together with and including galvanized crimped wire wall ties in accordance with SANS Specification 28. The wire ties are to be of sufficient length to allow each end to be built into brickwork built into every fourth course and spaced at 450mm staggered centres (seven ties per square metre). The bricks are to be well wetted before being laid and the course of bricks laid last is to be well wetted before bedding the next course of bricks upon it. The brickwork is to have all perpends flushed up solid and each course is to be laid on a solid bed of mortar. No false headers are to be used. Whole bricks are to be used except where bats or closers are legitimately required to form bond.

Unless otherwise described one brick walls are taken at a nominal thickness of 230mm.

The joints of all walls to be plastered are to be raked out as the work proceeds to form key for plaster. All walls are to be carried up regularly so that no part is built more than 1,2m higher than the adjoining walls.

Mortar joints generally are not to exceed 10mm thickness unless otherwise indicated on the drawings. If a specific brick scale is indicated on the drawings, either drawn or written, it must be adhered to.

Solid bricks to X-Ray Room walls are to be used. If hollow core bricks are used, these are to be grouted up solid.

HOLLOW WALLS: — are to be formed of two thicknesses of brickwork as specified with cavity between, tied together, unless otherwise specified, with and including A.I.S.I. Type 304 stainless steel wire butterfly type wall ties in accordance with SANS Specification 23, of sufficient length to allow each end to be built into brickwork, built into every fourth course and spaced at 450mm staggered centres (seven ties per square metre). Cavities are to be kept clear of all rubbish, mortar droppings and projecting mortar.

BRICK LININGS TO CONCRETE: — unless otherwise described are to be tied to concrete with and including A.I.S.I. Type 304 stainless steel wire wall ties complying with SANS Specification 28 with one end embedded is to deep into concrete and other end built into the brick joints and spaced not less than seven ties per square metre.

REINFORCED BRICK LINTELS: — unless otherwise detailed are to be constructed in accordance with KZN Public Works Type Drawing.

PRE-CAST AND PRE-STRESSED CONCRETE LINTELS: — where specified, are to be of approved manufacture and the Contractor is to provide the Department with a certificate issued by the manufacturer certifying that the lintels are adequate for the purpose in terms of span, loading and number of courses and construction of brickwork above the lintel. The manufacturer is also to specify the minimum bearing required at each bearing end and the nature and period of temporary propping required. Rates or pre-cast pre-stressed concrete lintels are to include for any cement mortar filling required and for temporary propping in accordance with the manufacturer's instructions.

BAGGING DOWN BRICKWORK: — shall be carried out when the mortar in joints is still soft by rubbing over with wet rough sacking until all joints and crevices are evenly filled, including additional mortar if necessary to obtain an even surface or, when the mortar in joints is set, by rubbing over as described but including cement grout as necessary to fill up the joints and crevices.

CRAMPS: — for timber door frames shall be 1.6mm thick galvanized hoop iron 32mm wide with one end turned up 50mm and twice screwed to stile of frame and built 450mm deep into wall with other end turned up into brick joint and cranked as necessary where built into cavity wall. Cramps shall be built in approximately 330mm from top and bottom of stile and intermediately at not exceeding 825mm.

TIES TO WALL PLATES, RAFTERS, ETC.: — shall be 1.6mm thick galvanized hoop iron 32mm wide and at least 1500mm long with one end turned up and built in not less than ten courses deep into brickwork or embedded in concrete beams or slab and with end left projecting and wrapped around timber rafter and spiked to timber wall plate. Where ties are embedded to concrete beam or slab, they must be wrapped around the bottom steel bar reinforcement of the beam or slab.

WELDED MESH BRICK REINFORCEMENT: — shall be 55mm, 80mm, 155mm or 235mm wide consisting of two 3.55mm main high tensile steel wires at 50mm, 75mm, 150mm or 230mm centres respectively with 2.80mm high tensile-steel cross wires electrically welded at 300mm centres, lapped 150mm at end joints, 75mm at angles and built 110mm into connecting walls. No allowance has been made for laps.

BITUMEN EMULSION WATERPROOFING TO BRICKWORK: — The inner thickness of external superstructure walls whether hollow or solid, behind facing bricks, is to be bagged and painted with two coats of approved bitumen emulsion waterproofing compound.

FACING BRICKS. PAVING BRICKS, QUARRY TILES, ETC.: — Facing bricks shall comply with SANS specification 227. Facing bricks, paving bricks, quarry tiles, terra cotta grille blocks, etc. are to be of the types and colours specified, specially selected, free from blemishes, square on all faces, uniform in size, shape and colour and equal to a sample to be deposited with and approved by the Department.

Special care must be taken to preserve the arrases and faces of facing bricks, paving bricks, quarry tiles, etc. during transit and handling.

FACED BRICKWORK: — Facing bricks shall be sorted to ensure proper mixing of the bricks within the colour range of each type of facing bricks. Sudden changes in the general colour of faced brickwork in any one type of facing brick will not be acceptable. Sand used in mortar for faced brickwork is to be clean washed sand and sand from the same source is to be used throughout to maintain a uniform appearance. Faced brickwork is to be pointed as specified as the work proceeds. Keyed-in joints are to be formed with a round jointing tool and square recessed joints are to be approximately 6mm deep formed with a square jointing tool. All perpends are to be accurately kept. The bond is to be broken, if necessary, in the centre of panels above and below windows, above doors, between openings and in the centre of sides to piers. No broken bond will be allowed at reveals or quoins. All cutting to face bricks is to be done with a carborundum or other approved high-speed brick saw. Faced brickwork is to be protected from injury, mortar splashes, etc. and cleaned down with spirits of salts and scrubbed down with water at completion to the approval of the Department.

PAVING BRICKS AND QUARRY TILES: — unless otherwise described are to be pointed as the work proceeds with 6mm wide keyed-in joints. Paving bricks and quarry tile paving, sills, etc. are to be protected from injury, mortar splashes, etc. and cleaned down with spirits of salts and scrubbed down with water at completion to the approval of the Department.

FIBRE CEMENT SILLS: — are to be of approved manufacture without fixing lugs, even in shape, uniform in colour, free from cracks, twists and other defects, in single length between reveals and of the thickness and colour specified and equal to approved sample.

RATES

Brickwork Generally: — Rates for brickwork are to include for hacking the face, or raking out the joints, of brickwork where necessary to form key for plaster, etc. and for plumbing angles and surfaces, all square cutting, wedging and pinning against columns, beams, slabs, etc. for all waste in cutting and wire ties required in tying skins together as described.

Rates for hollow walls are to include in addition to the above for keeping the cavities clean and free of mortar droppings and for butterfly type wall ties, all as described.

Where items are described as cut and pinned, built in, bedded, wedged and pinned, etc. rates are to include for grouting in or bedding solid with 1:3 cement mortar, unless otherwise stated.

Where window units, etc. are described for building in as composite, rates are to include for assembling of units as required and, unless otherwise described, for tap screwing to coupling mullions or transoms, including holes:

Faced Brickwork, etc.: — Rates for all fair and faced brickwork, brick paving, grille block walls and the like are to include in addition to the foregoing for building or laying to true surfaces and angles, all fair square cutting and fitting and cleaning down to approval at

completion.

Rates for brick sills, copings, steps, margins, thresholds and the like shall include for fair ends and angles unless different bricks or tiles are used or special cutting is required.

Rates for items described as “Extra over ordinary brickwork” are to be for the extra cost of the facing bricks specified over common brickwork built in stretcher bond, and are to include for building in cement mortar consisting of one part cement to five parts clean washed sand and for pointing as described.

Rates for items described as “Labour and Material” are to be for the full cost of the facing bricks specified, and otherwise as above described.

Rates for all cut face brick linings are to include for cutting and bonding at ends.

Quarry Tiles: —Rates are to include for all square cutting and fitting, bedding and jointing in cement mortar consisting of one part cement to three parts clean washed sand, for pointing as described as the work proceeds and cleaning down to approval at completion.

Rates for treads, sills, copings, cappings, skirtings etc. are to include for pointing to exposed edges, ends and projecting soffits.

Air Bricks: — Rates for air bricks and air vent, gratings are to include for forming openings through the walls, for all necessary jack arches and turning pieces, for plastering all round the openings in cement mortar, and where in hollow walls, for building cavity solid all round in addition.

Fibre Cement Sills: — Rates are to include for all square cutting, waste, and fitting and for bedding in an approved epoxy adhesive.

Terra Cotta Grille Blocks: — Rates are to include for all square cutting and waste and fitting, bedding and jointing in cement mortar consisting of one part cement to three parts clean washed sand and for pointing with keyed in joints on both faces and into reveals of openings as the work proceeds.

5. WATERPROOFING

GENERAL: — All measurements are nett — no allowance being made for laps in sheet materials or for waste in cutting.

WORKMANSHIP: — All work is to be carried out to the approval of the Department by skilled and qualified workmen and in accordance with the methods prescribed in SANS Code of Practice 021 for waterproofing of buildings.

All work is to be executed in accordance with the instructions issued by the manufacturer of the material being used. Roof coverings and linings are to be laid to the fails, cross falls, etc. provided in the screeds or other surfaces to which they are to be applied.

Surfaces to be waterproofed are to be dry and cleaned of all dust, chips, etc. immediately prior to the commencement of this work and are to be free of any contaminating substances or projections that may damage the waterproofing materials being used.

POLYETHYLENE SHEETING: — is to comply with SANS Specification 952 and bear the SANS mark. The sheeting is to be laid with a minimum lap of 150mm, unless otherwise specified, at angles and junctions with laps sealed in accordance with the manufacturer’s instructions.

MASTIC ASPHALT ROOFING: — is to conform to SANS Specification 297 and is to be laid hot in two or three layers, as stated, with each layer of minimum 4mm thickness and laid to break joint with the underlying layer by not less than 150mm.

Prior to the commencement of any work, the specialists who lay the mastic asphalt roofing are to satisfy themselves as to the acceptability of the surfaces upon which the mastic asphalt is to be laid, as the said specialists will be held fully responsible therefore.
Mastic asphalt to surfaces not exceeding 10-degree slope is to be laid in two layers on and including one layer of approved reinforced waterproof building paper lapped 75mm at all edges. Rates are to include for all cutting and waste on building paper.

Mastic asphalt to surfaces exceeding 100 and not exceeding 200 slope is to be laid in two layers on surfaces which have been hacked, grooved or scoured to provide an adequate key. Rates are to include for the necessary preparation of the surfaces.

Mastic asphalt to vertical surfaces and surfaces exceeding 20-degree slope is to be laid in three layers on and including any necessary expanded metal lathing securely fixed to the surfaces to prevent creeping. Where vertical surfaces do not exceed 300mm in height the surfaces to receive mastic asphalt may alternatively be prime coated with a latex based bitumen emulsion primer prior to the application of the mastic asphalt.

Anile fillets to all internal angles are to be run in one operation.

Finishing coats of bituminous-based aluminium paint on mastic asphalt roofing have been measured separately.

FLEXIBLE GLASS-FIBRE REINFORCED POLYESTER WATERPROOFING: — shall be of the type specified, or other approved, supplied and laid in-situ by a specialist sub-contractor, all to the approval of the Department and shall carry a written 10 (ten) year guarantee.

The waterproofing applied in-situ shall consist of one layer of three-ply bituminous felt underlay bonded to the substrate and covered with flexible glass-fibre reinforced polyester waterproofing comprising a chopped strand glass-fibre mat having a minimum mass of 450g / m^2, impregnated with flexible unsaturated polyester resin and finished with two coats of abrasion-resistant flexible unsaturated polyester surface coating which shall not show any sign of the glass-fibre reinforcement. The total mass of the waterproofing (excluding the bituminous felt underlay) shall be not less than 1.8kg / m^2.

Chopped strand glass-fibre mat reinforcement is to comply with the requirements of SANS Specification 419.

All unsaturated polyester resins are to be suitable for their intended use and comply with SANS Specification 713 and are to be ultra-violet ray stabilised.

All flexible glass-fibre reinforced polyester waterproofing is to be finished to approved opaque colours (excluding red or orange tints), is to be properly cured, and is to be free from porosity, blisters, cracks, surface crazing or other defects which may affect its appearance or its performance, with the surface colours consistent throughout.

Samples of flexible glass-fibre reinforced polyester waterproofing are to be submitted to and approved by the Department and all work executed is to be equal to the approved samples.

EXPANSION JOINT SEALANTS: — Polysulphide sealants, where specified, are to be approved polysulphide sealants complying with SANS Specification 110 Type 2, well compacted into joint.

Rates are to include for priming joints where recommended by the manufacturer of the sealant being used with a suitable and approved primer.

All work is to be executed by the manufacturer of the material, or other specialist firm, all in accordance with the manufacturer's instructions.

RATES: — for all roofing and linings are to include for cleaning and preparing the surfaces to be waterproofed as before described, for protecting from damage and cleaning down, flood-testing if required and handing over in an acceptable and guaranteed watertight condition at completion.
Rates for sheet waterproofing materials are to include for all dressing, bending, narrow widths, angles, intersections, cutting and waste and where applicable for the extra material required for lapping and for sealing laps as described.

Rates for roofing described as laid on "flat" roofs are to include for laying to slopes not exceeding 100mm from the horizontal.

6. ROOF COVERINGS

CONCRETE ROOFING TILES: — shall conform to SANS Specification 542. The tiles are to be of pattern and colour specified and is to be even in thickness, uniform in shape and colour and free from cracks and blemishes. The tiles are to be laid to "straight bond" in accordance with SANS Code of Practice 062 with vertical joints and bottom edges of each course ranging perfectly straight.

Unless otherwise specified each tile in every third course, all tiles in eaves and ridge courses and tiles in every course on each side of hips and valleys shall be secured with copper clout headed nails driven into the battens or with approved non-corrodible tile clips and nails in accordance with the manufacturer's instructions. Where nail holes in tiles have been cut off at hips, valleys, top edges, etc. new holes are to be drilled.

All ridge and hip cappings are to be of the types specified and of colour to match the roofing tiles. The cappings are to be bedded, jointed, pointed and torched up over roofing tiles in 1:3 cement mortar tinted to match the tiles. Where cappings having butt jointed ends are specified, an approved damp proof course conforming to Type C of SANS Specification 952 is to be fixed under, laid over the roofing tiles in accordance with the manufacturer's instructions.

Barge cappings are to be of the types specified and of colour to match the roofing tiles. The barge capping tiles are, unless otherwise specified, to be bedded, jointed, pointed and touched up over roofing tiles in 1:3 cement mortar tinted to match the tiles with every tile drilled and secured with copper clout headed nails to timber barge boards or bearers (elsewhere measured).

Concrete tiles to residential units in non hail area's are permitted.

"**CHROMODEK" ROOFING SHEETS: -** Shall be the secret fixed type, supplied with all fittings in full-length sheets in the profile and colour as specified. Sheets shall be a minimum of .58mm and maximum of .8mm thickness. When .58 thick sheets are used, purlin spacings shall be a maximum of 1.2mtr¢ and maximum 1.5mtr¢ for .8 thickness. Sheets shall leave the factory in the specified colour and any scratches etc., due to handling are to be 'touched up' on site after installation. All fixings, valleys, cappings and securing clips shall be to manufacturers' recommendations and no variations shall be accepted without prior approval from the department.
0,58mm thick roof sheeting for purlins up to 1,2m spacing and 0,8mm thick roof sheeting for purlins exceeding 1,2m – 1,5m spacing.
In area's up to 30Km from the coast, metal roof sheeting to be 0,58mm thick with special corrosion protection as supplied in " Global- Duro" roofing sheets. All other area's to be 0,58mm as "Global-Tech corrosion protection. 0,58mm "Klip Lock 700 " or "Craflock " and 0,8mm " Brownbuilt ". (0,8mm is recommended for high rainfall and snow fall area's due to deeper trough.)

RATES: **—** for roof coverings, are to include for all necessary half tiles at verges and for all square cutting and waste at verges, abutments, and top and bottom edges and to both sides of ridges.

Rates for cappings, etc. are to include for all short lengths, cutting, waste and fitting at intersections.

All measurements are nett. No allowances have been made for overlaps.

CORRUGATED IRON ROOFING, CLADDING AND FITTINGS: — are to be of an approved brand and are to be manufactured from galvanized steel sheets of the thickness specified after galvanising and having a galvanized coating of "Iscor Coating Designation Z275" for inland areas and 'Z600" for coastal areas as specified.

Roofing, etc. shall be lapped one and a half corrugations at sides and 30mm at ends unless otherwise specified. Roofing, etc. shall be fixed to timber purlins, rails etc. with standard galvanized drive screws 65mm long and to steel purlins, etc. with 8mm galvanized hook bolts of the lengths stated.

Each screw or bolt shall be fitted with one lead washer and one bituminous felt washer and shall be spaced not less than one screw or bolt to every alternate corrugation across the width at end laps and ends of sheets and at each intermediate purlin or rail.

Rates for roofing, cladding and fittings are to include for: —

a) Fixing as described.
b) Bedding washers in an approved mastic sealing compound
c) Coating projecting ends of hook bolts and nuts with bitumen after fixing
d) All square notches, square cutting and waste, laps, fitting and drilling. All measurements are nett. No allowance has been made for laps.

FLUTED STEEL ROOFING, CLADDING AND FITTINGS: **—** are to be approved galvanized fluted steel sheets and fittings manufactured from galvanized steel sheets of the thickness specified after galvanising

(a) **Galvanized steel sheets and fittings**: **—** are to be manufactured from galvanized steel having a galvanized coating of "Iscor Coating Designation Z275" for inland areas and of "Z600" for coastal areas as specified with the sheets having a plain galvanized finish and the fittings an embossed galvanized finish.
Roofing, etc. shall be fixed to timber purlins, rails, etc. with standard drive crews of the lengths stated and to steel purlins, rails, etc. with 8mm galvanized hook bolts of the lengths stated. Each fixing screw or bolt shall be fitted with washers as recommended by the manufacturer of the roofing

Vertical cladding shall be fixed with broad flutes externally - unless otherwise described - to timber rails with standard galvanized drive screws 50mm long and to steel rails with 6mm diameter x 25mm long galvanized sheet bolts. Each fixing screw or bolt shall be fitted with washers as recommended by the manufacturer of the cladding including drilling steel rails as necessary.

(b) **Baked enamel finished galvanized steel sheets and fittings**: **—** are to be manufactured from un-passivated galvanized steel having a galvanized coating of "Iscor Coating Designation Z275" and finished where described in the items, with approved factory applied baked enamel finish of colours to be selected by the Department.

Roofing, etc. shall be fixed to timber purlins, rails, etc. with sherardised or stainless steel drive screws of the lengths stated and to steel purlins, rails, etc. with 8mm diameter sherardised or stainless steel hook bolts of the lengths stated. Each fixing screw or bolt shall be fitted with washers as recommended by the manufacturer of the roofing.

Vertical cladding shall be fixed with broad flutes externally, unless otherwise described, to timber rails with sherardised or stainless steel drive screws 50mm long and to steel rails with 6mm diameter x 25mm long sherardised or stainless steel sheet

bolts. Each fixing screw or bolt shall be fitted with washers as recommended by the manufacturer of the cladding including drilling rails as necessary.

(c) **Generally**: **—** where sheet lengths are in excess of 12m these have been measured separately.

Roofing, etc. shall be lapped one flute at sides and 230mm at ends unless otherwise specified. Fixing roofing sheets are to be spaced one every crest along purlins at top and bottom edges of roof slopes and one to every alternate crest along intermediate purlins. Fixings to vertical cladding are to be spaced one to even alternate trough to each rail.

Fittings, unless otherwise specified, are to be lapped a minimum of 150mm and where necessary are to be drilled for and fixed with the fixings securing the roofing and cladding sheets.

Rates for roofing, cladding and fittings are to include for: —

(a) Fixing as described and in accordance with the manufacturer's instructions.
(b) Seam bolting all side laps at not exceeding 450mm centres with 6mm diameter x 25mm long sheet bolts or with 20mm x No. 14 self-tapping screws and each screw or bolt is to be fitted with washers as recommended by the manufacturer of the roofing.
(c) Fixing of fittings where described as fastened to roofing, cladding, etc. with approved pop rivets spaced at not more than 340mm centres.
(d) Sealing side and end laps of sheeting and end laps of fittings with one continuous strip of approved 5mm diameter pre-formed flexible sealant strip.
(e) Coating the exposed heads of fixings and fasteners to baked enamel finished materials and cut edges of sheets and fittings with matching touch-up compound supplied by the manufacturer of the sheeting and in accordance with his instructions.
(f) All square notches, square cutting and waste, laps fitting and drilling. No punched holes will be permitted.
(g) Taking special care at all times to prevent damage to the finished surfaces of the baked enamel finished materials.

All measurements are nett. No allowance has been made for laps.

7. CARPENTRY AND JOINERY

NOMENCLATURE OF TIMBERS: — Timber described as "softwood" is to be South African softwood of the relevant type, grade, etc. as specified.

The names used for imported timbers are those given in Supplement No. 1 to SANS Code of Practice 12 under "Nomenclature of Standard Trade Names of Imported Commercial Timbers used in South Africa" and the Contractor is referred thereto.

TIMBER SIZES: **—** Sawn and wrot timbers are to be of the full sizes stated.

Where "out of" sizes have been shown for wrot timbers on the drawings, an allowance of 4mm for each wrot face off the sizes shown has been made.

Doors, fanlight, sashes, manufactured boarding, plywood, veneers, etc. must be of the full thickness specified.

Where doors, door frames, fanlights and frames; sashes, windows and frames are measured as numbered items, the overall sizes are given to the nearest 10mm.

Tolerances in nominal dimensions for imported timber shall not exceed the following:

a) For nominal dimensions up to 76mm the actual dimension may be 2.5mm under for each 25mm
b) For nominal dimensions 76mm and over the actual dimension may be 1.6mm under for

each 25mm.

STORAGE OF TIMBERS: — Timber delivered to the site is to be property stacked above ground, either on bearers or platforms under cover and protected from inclement weather.

ORDERS: — for timber, are to be placed immediately after the Contract is signed, as the Contractor will be held responsible for any delay in delivery.

PRE-TREATMENT OF TIMBERS: — All permanent timbers installed in the buildings are to be treated against borer, cryptotermes, termites, and all wood destroying agencies with an approved preventative, all in accordance with SANS Code of Practice 05.

Any surface subsequently exposed by cutting or planing must be touched up with the same preservative solution and rates are to include for all preservative required.

The Contractor is to obtain a certificate from the merchants supplying the treated timber, to the effect that the timber has been treated against wood destroying agencies. The Department has the right to remove samples of the treated timber to have tests carried out by the Division of Entomology or any other Authority.

Temporary timber on the site, e.g. shuttering props, etc. must be free from wood destroying agencies. Any timber so affected is to be immediately removed from the site.

Materials which do not comply with the above requirements or are in any way damaged or discoloured by the pre-treatment must be replaced by the Contractor at his own expense, if so directed by the Department.

STRESS GRADING OF SOFTWOOD TIMBER: —The Mechanical Stress Grading of Softwood Timber (Flexural Method) shall be in accordance with SANS Code of Practice 0149.

STRUCTURAL TIMBER: — for carpentry is to be South African softwood in accordance with SANS Specification 563 and, unless otherwise specified, of Stress Grade V4, and branded accordingly. If it is necessary to use sizes that have to be re-sawn, these shall be re-graded and stamped with the respective SANS stress grade mark. Unless this is done, timber which is re-sawn is no longer considered as complying with the specification and shall on no account be used.

BRANDERING / BATTENS: — of cross-sectional size 50 x 50mm and under shall be South African softwood in accordance with SANS Specification 653 and branded accordingly.

JOINERY AND SHELVING: — Softwood for joinery and shelving shall be South African softwood (S. A. Pine) in accordance with SANS Specification 1359 and branded accordingly. All timber for joinery is to be air or kiln-dried to a moisture content of approximately 12 %.
Shelving to linen stores to be timber slatted with wall bands or free standing units as specified.

STRUCTURAL LAMINATED TIMBERS: — are to be of the sizes detailed, wrot on all faces and are to be manufactured by an experienced fabricator to the approval of the Department. Adhesives used must meet the requirements of the current SANS 1204 for external use.

The surface appearance of members shall be Class C (Constructional) or Class S (Selected) as defined in SANS Specification 876 and as stated in the items

FINGER-JOINTED TIMBERS: **—** are to be manufactured in accordance with SANS Code of Practice 096— “The manufacture of finger-jointed structural timber”.

Contractors wishing to use finger-jointed timber must supply a guarantee that the finger jointing complies with the above Code of Practice and that the glue is suitable for the particular member.

JOINTING OF PURLINS, FASCIAS, RAILS, BEAMS, ETC.: —shall, unless otherwise detailed, be as follows: —

Purlins, slating battens, etc. of cross-sectional size 50 x 76mm and under shall be jointed over the rafter. Larger sized purlins may be dealt with in the same way or by using some other suitable, recognised method. All purlins and battens shall be fixed to the supporting rafter by at least one nail skew driven from the direction of the ridge. Where the purlin or batten is fixed at more than 900mm centres, at least two nails shall be used at every fixing point.

Fascias shall be jointed over rafters.

Beams, rails, etc. shall be jointed over a support or at 1/5th span with a recognised joint using bolts, etc.

Roof and floor plates are to be halved at joints, angles and intersections and nailed together.

Floor joists and bearers are to have splayed heading joints nailed together and staggered to occur over bearers and sleeper piers respectively.

Sawn brandering is to be butt-jointed at heading joints and angles and where wrot, is to have splayed heading joints and mitred angles over all point of support.

HARD WOODS: — (Red Meranti and Sapele) are to be best quality, specially selected and well seasoned, free from all sapwood to the approval of the Department and are to be well kiln-dried.

Red Meranti is to be even in grain and colour, selected from “Standard and Better” grade from Malaysia. Sapele is to be *Entaindrophragma cylindrium* of F..A.S. grade.

PREFABRICATED TIMBER ROOF TRUSSES: -

Design: —The design of prefabricated roof trusses, bracing, and secondary members forming part of the total timber roof construction shall be prepared by a professional structural engineer (Truss Systems Engineer) strictly in accordance with SANS Code of Practice 0160 and the superimposed loading, unless otherwise specified, is to be taken as that for inaccessible roofs.

Analysis: — From the configuration and mechanism shown on the tender drawings the Truss System Engineer shall submit, through the Contractor, to the Department detailed calculations and working drawings showing timber sizes, connections, truss dimensions, etc.

This submission must include details of both trusses and bracing as specified below:

a) TRUSSES: The analysis of the truss system is to include diagrams of the trusses with marked up members and nodes showing dimensions, positions of supports and positions and values of applied loads, which, if not specified in the tender documents, must be derived from an approved source of reference which shall be indicated in the analysis. Due account must be taken of any eccentricity particularly at supports.

   The analysis must also indicate allowable stresses, internal axial forces, moments and resulting stresses, as well as timber sizes and grades and detailed plate sizes

(b) BRACING: Bracing must be designed to withstand the forces specified in SANS Code of

Practice 0163 clauses 6 and 7.

If the bracing system incorporates trusses, the additional forces must be shown in the analysis of the trusses.

The drawings must give all the information necessary for the construction of the bracing.

An outline of the bracing system, including temporary bracing must be shown on a working drawing giving clear details of fixings and anchorages into the supporting structure at wall plate level. Interference of bracing with truss members must be taken into account. Moments caused by forces applied between node points of bracing trusses and the axial forces must be given in the bracing calculations, also sizes and fixings of the bracing system.

Submissions: **—** A copy of letter reference TR1 (attached at the end of this document) completed and signed by the Truss System Engineer must be submitted by the Contractor at the same time as the list of Sub-Contractors. Two sets of calculations and drawings with pertinent erection instructions for the whole roof construction as presented by the Truss System Engineer must be submitted to the Department for consideration and permission to proceed.

This in no way absolves the Contractor of his responsibilities.

Any modifications to design or drawings are to be arranged directly between the Truss System Engineer and the Department. It will be the Contractor's responsibility to ensure that information is presented to the Department in good time and no claims will be entertained in respect of any delays resulting from the late approval of drawings, etc.

Any difference in cost between the roof system initially submitted by the Contractor and the finally accepted system to meet the original design requirements will be for the account of the Contractor.

The Truss System Engineer will be required to inspect the roof structure and certify on letter reference TR2 (attached at the end of this document) that the construction is in conformity with his design, and any costs in this respect must be included in rates for the truss system.

If, in the opinion of the Department, further visits are necessary due to errors or omissions on the part of the Contractor or the Truss System Engineer the costs of these inspections will be for the account of the Contractor.

Fabrication and Storage: — Fabrication shall not commence until written permission has been given by the Department. The prefabricated roof trusses shall be manufactured, supplied and delivered to site by an approved manufacturer with all members accurately mitre cut, close butted and rigidly fixed together by approved galvanized metal spike connectors applied simultaneously to both sides of every joint by use of a mechanical press in accordance with SANS Code of Practice 0163.

Permissible deviations in fabrication of trusses are to be as specified in SANS Code of Practice 0155.
The following will not be permitted at joints: —

b) knots, splits or finger joints
c) varying member thicknesses
d) plates not fully pressed into timber
e) gaps between members exceeding 1.5mm average over the width of the mitred members.

Stress grade marks must be clearly visible on all members.

Relevant dimensions must be checked on site before fabrication. Trusses must be stored off the ground and under cover both at the factory and on site.

Erection and Bracing: — Unless otherwise instructed, erection must be carried out as described in "The Erection and Bracing of Timber Roof Trusses" published by the Truss Plate Association of South Africa and the National Timber Research Institute - CSIR.

Where the overall lengths of trusses exceed 13 m, complete braced bays are to be assembled on level ground and lifted into position suspended at maximum 3m intervals from a spreader bar. Alternatively, braced bays may be assembled in position on a minimum of two lines of temporary intermediate supports below node joints. Temporary supports must be removed before roof covering is placed.

The erector must be suitably qualified and must satisfy the Department that he can meet the specification.

Where the roof incorporates a hipped end, the construction is to commence with the hip, otherwise erection is to be commenced with a fully braced bay.

Temporary bracing must be installed as erection proceeds in accordance with the accepted design.

The Contractor must notify the Department in sufficient time in order that an inspection may be made before the roof covering is placed.

The trusses will be subject to the following tolerances: —
a) maximum out of straight — length/400
b) maximum out of vertical at any point—height/200.

Rates: **—** The Contractor is to allow in his rates for the roof trusses for the design, manufacture, supply, hoisting and fixing of the roof trusses and permanent bracing, any necessary temporary bracing, and for the costs of all inspections by the Truss System Engineer.

Purlins or battens for roof coverings have been measured elsewhere. Rates for roof trusses are also to include for the exposed rafters at eaves overhangs to be wrot all round and trimmed and splay cut as required.

INSULATION, WATERPROOFING AND DUST PROOFING MATERIAL FOR ROOFS: — shall be of an approved aluminium foil faced both sides laminated Kraft Paper and synthetic reinforced material fixed in accordance with the manufacturer's instructions, lapped 150mm at all edge, unless otherwise specified.

GYPSUM PLASTERBOARD: **—** is to be in accordance with SANS Specification 266.

GYPSUM COVED CORNICES: — are to be in accordance with SANS Specification 622.

FIBRE CEMENT SHEETS: **—** are to be in accordance with SANS Specification 685.

FIBRE CEMENT CELLULOSE SHEETS: — are to be in accordance with SANS Specification 803.

HARDBOARD: — is to be in accordance with SANS Specification 540. Tempered and un-tempered hardboard is to be conditioned in accordance with the manufacturer's instructions before fixing in position.

VENEERS: — All decorative face veneers are to be selected kiln dried of best quality of the respective timbers, free from knots, cracks, patchwork, sapwood and other defects and bonded under heat and hydraulic pressure with water-resistant synthetic resin adhesive.

Commercial veneers are to be selected rotary cut hardwood veneers and otherwise as

described above.

PLYWOOD: — is to be long grain three or five-ply type manufactured with hardwood veneers with selected face veneers as described, bonded under heat and hydraulic pressure with water-resistant synthetic resin adhesive and sanded to a smooth finish.

CHIPBOARD: — All joinery fixtures shall be manufactured from 18mm Moisture resistant V313 Melamine Faced Chipboard (Particle Board) only with 32mm worktop as specified.

BATTEN BOARDING: — is to be long grain three-ply boarding manufactured with kiln-dried South African Meranti softwood core formed of laminations not exceeding 45mm wide and faced on both sides with selected veneers as described, bonded under heat and hydraulic pressure with water-resistant synthetic resin adhesive and sanded to a smooth finish.

DECORATIVE LAMINATE LININGS: — are to be 1.2mm thick approved general purpose quality high pressure decorative melamine laminate sheeting with satin finish and of selected colours and patterns, and rates are to include for all square cutting and waste and square notching, close cut and mitred external angle intersections where required and for bonding to the timber backings with an approved adhesive in accordance with the manufacturer's instructions.

The linings are to be cut out of single sheets in obviate joints but where joints are unavoidable, the sheets are to be butted to form a tight inconspicuous joint.

NAILS AND SCREWS: **—** Mild steel nails are to be in accordance with SANS Specification 820. Mild steel and brass screws are to be round headed, countersunk, etc. as appropriate and are to be in accordance with SANS Specification 1171. Nails and screws shall be of the size, length and type appropriate to their respective uses.

PLUGS, ETC.: **—** Where items of woodwork are described as "plugged", these may be nailed to timber plugs or slips built into the structure, and where described as "plugged and screwed" these may be screwed to timber or approved patent fixing plugs.

SHOT FIXING: — Where items of woodwork are described as "shot fixed" these are to be fixed with an approved cartridge-assisted tool, and rates are to include for all nails, spikes, blanks, washers, cartridges, accessories, etc.

CARPENTRY: — Timbers are to be the best of their respective kinds, free from sap, shakes, large, loose or dead knots, wavy edges and other defects and thoroughly seasoned. Wrot surfaces are to be finished clean, smooth and free from tool marks.

Timbers shall be in as long lengths as possible.

Rates for sawn and wrot structural timbers are to include for notching, splay and birds mouth cutting, housing, halving, scarfing, cutting timbers to the required lengths, spiking and clinching and or hoisting and fixing timber in position.

CEILINGS: — are to be of the types described, fixed to timber brandering, bearers etc. as described and with panels set out so as to give even width panels not less than half a sheet wide at edges. Brandering shall be spaced at not more than 400mm c/c and fixed at right angles to sheets.

FLUSH PLASTERED CEILINGS: — are to be formed of gypsum plaster board of the thickness stated, generally in 1200mm widths and long lengths, fixed grey side down to timber brandering, bearers, etc. as described, with butted joints between the boards covered with 65mm wide strips of galvanized wire scrim fixed along both edges, including all square notches and square cutting and waste, and the ceiling finished with two coats of approved retarded hemi hydrate gypsum plaster applied in accordance with the manufacturer's instructions to a finished thickness of not less than 6mm, including pressing into scrim over joints and finished to a smooth polished surface.

TRAP DOORS:- 900 x 600 Prefabricated hinged trap door.

SUSPENDED CEILINGS BOARDS: **—** are to be of the types described or as specified – normally 6mm x 600mm x 1200mm embossed fibre cement boards - and inclusive of their component parts must be of sufficient strength to perform the function for which they are to be used, manufactured from best quality materials and conform to the requirements of the Fire Master. The exposed surfaces of all ceiling panels and supporting members are to be uniform in colour and free from surface blemishes.

Hangers are to be galvanized and are to be at maximum 1, 2mtr centres to meet the requirements of the specification, each with one end fixed to the suspension grid main bearers and the other end fitted with suitable galvanized fixing straps to the roof structure. Fixing points must be agreed to by the Department before any power shot fixings are made. Hangers must not be suspended from air-conditioning ducts.
Hangers to be provided at all four corners of recessed light fittings.

Component parts and fixings other than aluminium must be non-corrosive and able to withstand atmospheric pollution. Surfaces of aluminium which are in contact with other materials when fixed, particularly ferrous metals, are to be suitably insulated to prevent electrolytic corrosion.

All work is to be executed by specialists in accordance with the manufacturer's instructions, and to the approval of the Department.

Rates for ceilings are to include for hangers, suspension systems, ceiling panels, for constructing the ceilings in a manner suitable for carrying air conditioning diffusers and light fittings in the positions required, for setting out the ceilings to layouts approved by the Department, for all non-standard size panels, for modifications to standard suspension systems as necessary to work around any air-conditioning ducts or pipes or light fittings, for all necessary square cutting and waste, notching and fitting around projections, columns, etc.

EXPOSED TEE-SYSTEM SUSPENDED CEILINGS: — are to be of the type described with main tees and cross tees spaced at the required centres to suit the sizes of panels used, with the cross tees fitted between and notched to form a flush fit with main tees unless otherwise described. All suspended ceilings to be fitted with shadow line trimming to perimeters.

Main and cross tees shall be holed as necessary and provided with timber wedges or steel clips to prevent ceiling panels from lifting.

CONCEALED TEE-SYSTEM SUSPENDED CEILINGS: — are to be of the type described with main and cross tee section bearers spaced at the required centres and all properly fitted together at intersections.

ALUMINIUM TRIMS TO CEILINGS: — are to be of extruded aluminium of 6063-TF or equivalent quality and temper, of the sections described. Anodised trims are to be of the colour stated.

Rates are to include for all cutting, fitting at intersections, mitres, etc. and rates for items described as fixed with screws are to include for countersunk drilling and fixing with approved countersunk stainless steel screws.

INSULATION MATERIAL FOR CEILINGS: — shall be 75mm thick resin bonded glass wool / mineral wool thermal insulation blanket complying with SANS Specification 1381 of the thickness specified, delivered to the site in unopened rolls in its original factory wrappings over solid gypsum boards or styrene of 25mm thickness as specified glued to suspended ceiling tiles.

DOORS: —

Flush Doors: - Semi-solid and solid laminated flush doors are to be of approved manufacture complying with SANS Specification 545.

The doors are to be finished on both sides with the facing veneers specified and concealed on both stiles unless otherwise specified, with hardwood edge strips and where doors are required to receive a transparent finish, the edge strips are to match the facing veneers.

Doors with rebated meeting stiles are to have edge strips to the meeting stiles not less than 19mm thick.

Each door or leaf of double door, described as hung to swing, is to be fitted with necessary hardwood reinforcing blocks for bottom shoe and top centre of spring hinge.

Unless otherwise specified, all flush doors are to be interior quality, but, where exterior doors are specified, the glue used must comply with Type WBP of SANS 2304.

FRAMED, LEDGED AND BRACED BATTEN DOORS, ETC.: — Doors described as filled in with V-jointed boarding are to be filled in flush on one side with tongued and grooved vertical boarding, V-jointed on one or both sides and of the thickness stated. The boarding is to be in narrow widths, closely cramped up, rebated on outer edge and housed to grooves in stiles and rails and twice brass countersunk screwed at each intersection.

Ledges and braces and inner edges of the abutting stiles and rails are to be chamfered to form a V-joint at junction with the boarding. Braces to fall from lock to hinge side.

ENTRANCES TO SECLUSION WARDS: - Entrances to seclusion ward buildings shall be fitted with remote controlled full height 'Man Trap' Security Cubicles with bell pushes fitted to both entry and exit sides and remote unlocking / release operation enabled from security booth.

Doors to Seclusion Rooms: - Doors to seclusion rooms are to be steel lined solid core units with 100mm x 100mm viewing panel, glazed with 40mm bullet proof glass in a steel frame. Steel lining for doors is to be epoxy laminated to doors and around edges. Internal steel lining to be primed and finished with approved epoxy paint. External face of doors to be finished in veneer as per DOH standard details. Doors to be hung to open inward on special 6mm galvanized steel door frames with lugs pre welded to frame to fit every third course of brickwork. The complete unit is to be hot dip galvanized and built into surrounding 230mm solid brick walls. No welding to be done on site.

NOTE: - Above Anti–Bandit Security doors are solely supplied by "Chubb" and "Bitcon Industries" as a complete unit with all fittings and ironmongery.

DOORS TO X-RAY UNITS

Entrance doors to X-Ray rooms shall be top hung sliding door size 1830 x 2032 x 40mm, complete with heavy duty sliding door track – 'Henderson' or other approved -, 2.2mm lead insert between panels and four door stoppers. Door is to overlap door opening 100mm each side when closed.

JOINERY: — All timbers shall be in as long lengths as possible. Lengths for joinery shall be single where possible and where joints are unavoidable, they shall be made as inconspicuous as possible.

Timber for grounds, firrings, blocks, plugs, etc. shall be sound and free from defects.

All joinery work is to include for work in connecting by mortise and tenon, dovetailing, housing, flush pinning, etc. as may be by required and for all screws, nails and glueing

together and for sinking flush all exposed screws unless otherwise specified.

Wrot surfaces and edges are to be steel scraped and sandpapered before and if necessary, after fixing.

Edges are to be arras rounded unless specified to be angle rounded.

“Arras rounded” denotes that the sharp edges are slightly rounded off and that no mitring is required.

“Angle rounded” denotes rounded from 3mm to 10mm radius and is to include for housed and mitred joints.

Hardwood doors, frames, jamb and soffit linings, etc. are to be treated on all surfaces with one coat of approved sealer before building in, etc. and rates for these items must include for this. Batten doors with tongued and grooved battens are to have the tongues and grooves well sealed before assembling. The sealer used shall be compatible with the finishing coats to be applied.

Horns of door frames are to be checked and splayed back where frames are fixed projecting or flush with surface and built in.

Where doors, fanlights or sashes are described as hung to butts on steel or aluminium frames, rates are to include for supplying necessary steel, brass or stainless steel screws.

Panel work is to be secured to the grounds, etc. with screws concealed behind the mouldings or by sinking the screws and pelleting as directed.

Joinery is to be framed up, but not glued or wedged, immediately the order is given to commence work. Wherever possible, joinery shall not be placed or fabricated in position until the plaster has dried out. Reasonable tolerance shall be provided at all connections between the joinery and building carcass so that any irregularities, settlements or other movements shall be adequately compensated. All joinery shall be accurately scribed to fit the contour of any irregular surface. Should the joints of any joinery open or give, such defective work is to be taken down, refitted and redecorated or replaced by new joinery at the Contractor’s expense.

Only brass screws may be used for hardwood joinery.

The Contractor is to allow for cross-tonguing all solid wood sections unobtainable in single widths.

No joinery is to be primed until it has been inspected and approved by the Department.

All joinery liable to injury must be protected to the satisfaction of the Department. Rates must include for this temporary protection.

Rates for timber frames, mullions, transoms, linings, standards, rails, fascias, cornices, skirtings, beads, picture rails, etc. are to include for mitres, etc.

Rates for all items of timber-are to include for fixing and planting on as may be required with necessary panel pins or nails.

PARTITIONS:

These are to be of an approved system of standard construction, with an average sound rating of not less than 30 decibels taken over the whole face area.

Framing is to be natural finish anodised aluminium comprising posts at 1200mm centres unless otherwise described, with transom rails where specified, fitted between the posts, a

rail against ceiling and an aluminium standard skirting on each side at base, all neatly and securely fixed together.

Provision is to be made at the base of the partitions and in the ceiling rails and posts for electrical wiring, which will be installed under the electrical sub-contract, and the ceiling tails and end posts are to be fitted with continuous removable access plates.

Solid panelling is to be approved solid chip core panels of the thickness specified faced on both sides as described in the items.

Glazed panels are to be glazed as required, complete with all necessary natural finish anodised aluminium glazing beads and vinyl glazing strips.

Louver panels where specified are to be approved natural finish anodised aluminium adjustable louver sets each comprising head and sill weather bars and two jamb strips each fitted with louver brackets with spring loaded clips for and fitted with and including louvers as required and complete with tilt bars and operating lever handles. Where the openings are not the correct size to suit a full number of standard width louver blades, an alternate head weather bar must be provided to suit a fixed louver blade of the required width. The louver sets are to be fitted with the jamb strips positioned horizontally so that the louvers will be fixed vertically.

Partitions are to be in 1200mm modules, unless otherwise specified, except at ends where the odd lengths are to be made up by a narrow width at one end of the partition.

Ends of partitions against walls, window frames, etc. and the top edge of partitions against ceilings are to be fitted on both sides of partition with approved vinyl scribing sections fitted between the structure and the end post or top rail of the partition.

Plain openings are to have aluminium frames similar to door openings neatly fitted into the framing.
Doors are to be solid laminated flush doors complying with SANS Specification 545. The doors are to be finished on both sides with veneer as described in the items and concealed on both stiles with matching hardwood edge strips.

Where doors are described as having observation openings, these openings are to be of the sizes stated, glazed as specified with all edges bedded in approved neoprene gaskets and fixed with 10 x 25mm wrot matching hardwood rebated glazing beads mitred round and bradded to both sides.

Rates for doors are to include for all necessary additional aluminium framing to form door openings, and for hanging the doors on and including one and a half pairs of 102mm satin chrome finish brass hinges to each door.

All locks to doors in demountable partitions are to be supplied with two keys, and are to be controlled by the same master key as the mortise locks used elsewhere in the Contract when specified.

Unless otherwise specified all veneered solid panelling and doors are to be finished as follows: —

Prepare, stop with tinted stopping, apply an approved stain as necessary to achieve uniform colour appearance, and three coats of approved clear matt polyurethane finish including burnishing with steel wool between coats.

Rates for demountable partitions are to include for supplying, assembling, erecting, finishing, glazing and fixing complete between finished surfaces of concrete floors, plastered walls and ceilings, and all in accordance with the manufacturer's instructions.

DEMOUNTABLE PARTITIONS 50MM (NATURAL ANODISED).

Extruded Aluminium Sections

Supply and fit demountable “Kappa” partition system comprising anodized aluminium U-Channel fitted to suspended ceilings. Vertical split-post (mullion) to be fitted between floor and ceiling U-Channel at 1225mm c/c with angle brackets. Once framing is fixed, fit panels into place and secure with clip-on cover plates.
All aluminium sections may be anodized or powder coated in a variety of colours.

Panels

41mm thick semi solid core panels 2032 x 1200mm. The panels are made up of two outer skins of 3.2mm hardboard cladding. Lower panels to be provided with a 150mm wide solid mid-rail 850mm from the base of the panel to the centre of the mid- rail built in as part of the construction. The panels to be prepared before applying the final finish as specified.

Construction

Right angled corners to be formed with natural anodized aluminium radiused corner post fitted from floor to ceiling. Floor fixing to be angle brackets and ceiling fixing to be hidden block. The ceiling U-Channel butts up against radiused corner post.

Door Frames

Door frames to be natural anodized aluminium pre-fitted with woolpile gaskets, clipped into H-Profile at head and clipped into combination split post and cover plate at styles. The rebate on the door frame caters for standard doors of a thickness between 40mm and 44mm.

Glazing

Glazed panes to be framed with H-Profile fitted horizontally at top and bottom, butted against side of split-post and clip on cover plate combination and fixed with angle brackets. Glazing sections pre-fitted with woolpile gaskets and set into H-profiles and into post / cover plate combinations to form a neat glazing opening. Glazing beads pre-fitted with woolpile gaskets and then clipped into glazing section.

Termination

Openings for louver frames, sliding doors and windows, serving hatches and partition ends are to be lined with the aluminium termination section.

Skirtings

76mm high aluminium skirting to be glued to panels.

DRYWALL PARTITIONS:

Studs

50mm x 33.5mm x 0.5mm thick drywall galvanised steel studs are used. The studs to receive aluminium extrusions clipped onto both sides of the stud. Framing to be securely fixed to walls, floor and ceilings where necessary. Stud connectors to be used to join horizontal studs to vertical studs.

Floor Track

52mm x 25mm x0.6mm galvanised sheet steel track to be used.

Panels

12,7mm thick tapered edged gypsum plasterboard panels used and decorated in situ with panels secured to either side of framework.
Patient care areas to be 12mm Supa Wood panels in framework as specified.

Construction

Internal walls are constructed by fixing drywall studs to floor track @ 600mm c/c. Wall and ceiling junctions are formed by fixing 84mm x 19mm aluminium ceiling and wall channel to wall or ceiling. The floor track is then fixed into this; alternatively, these components may be fixed simultaneously. The studs are then fixed to floor.
The partitions, unless otherwise described are to be 75mm thick and covered both sides with 12,7mm thick tapered edged gypsum board in 1200mm widths to height specified.
The gypsum boards are screwed @ +/- 300mm c/c at all intersections to the floor and head wall tracks and vertical studs.
Using self-drilling, self-tapping, rust proofed countersunk screws, with screw heads and joints between boards and between abutting edges of boards flushed up with an approved jointing material.

Exposed Aluminium Framing
Door frames, glazing termination and ceiling and wall channels to be natural anodised aluminium. 25 x 25 x 1.5 aluminium angle stuck to external corners of partitioning. 80mm high aluminium skirting glued in position.

Glazing
Aluminium glazing section is clipped onto the flanged end of the stud around the glazing perimeter. The glazing section has a recess to accept a rectangular clip-in glazing bead which enables 3mm-8mm thick glass to be received in the system. The glass is retained with various sizes of PVC glazing gasket.

Termination
Openings for louver frames, sliding doors and windows, serving hatches and partition ends are to be lined with the aluminium termination section.

Skirting
The system is designed to accept recessed base, female, 60mm high aluminium skirting.

Sound Insulation
75mm Fibreglass Cavity Bat with a 35g glass tissue or 75mm Isotherm “Acoustisorb’ mineral wool blanket is to be installed between studding before fixing final outer panel.

All work is to be executed by a firm specialising in this type of work and all to the approval of the Department.

8. FLOOR COVERINGS, PLASTIC LININGS, ETC.

FLOOR SHEETING: — are to be of the composition, type, size and thickness specified with colour, pattern, graining, etc, consistent throughout, all to the approval of the Department.

Thermoplastic floor tiles: — are not to be used.

Fully flexible vinyl floor sheeting: — are to comply with SANS Specification 786 and is to be 2.5 mm nominal thickness.

Recessed entrance mats with brass frame at main entrance into a health facility as “Belgotex” Grimbuster or other approved. This to be positioned outside before entering.
In patient care area’s, no perforations to floor covering is to be made. Eg door stops, door barrel bolt floor keeps etc.
Where the specified sizes and/or thicknesses of floor sheeting differ from those in the SANS Specifications, such items of floor sheeting shall comply in all other respects with the relevant SANS Specifications.

SKIRTINGS, STAIR NOSINGS, EDGING STRIPS, ETC.: —are to be of the types and sizes specified and are to be of approved manufacture

CARPET TILES AND SHEETING: — are to be of the types specified and of approved colours and patterns all to approval of the Department.

LAYING: —
Vinyl Floor covering laying procedure and polishing.

Site conditions required before the layer commences an installing of a Resilient Floor covering. Some of these conditions may appear obvious, but they are not always complied with. If any of the following recommendations are ignored, it is likely that a number of problems will arise during or after installation of the flooring.

1. All building materials and equipment, e.g. sand, scaffolding, tools, etc. should be removed. (Do not allow heaps of sand, concrete, etc., to remain on the surface of the sub-floor since moisture transfer to the sub-floor takes place).

2. All resilient flooring materials require a smooth, hard, clean and level surface, not only for appearance but also for achieving a satisfactory adhesive bond and long-term durability. The Specifier and the Main Contractor shall ensure that the sub-floor is acceptable to receive the resilient flooring specified in respect of levelness, smoothness, soundness and cleanness. (The SANS Code of Practice 070/1991 as amended 1993 Section 9.3 details the requirements in this regard).
The flooring contractor shall ensure that the sub-floor is sufficiently dry prior to the installation of the flooring material. The floor should be tested by means of a Hygrometer or a Tramex. (Of the instruments available for determining moisture levels in sub-floors, the most practical and accurate is the hygrometer).

SHEETING
Ensure that the following steps are followed during the installation:

1. Trim off factory leading edge before laying sheeting.
2. Align the sheet in position that there is an opening no bigger than 1mm between adjacent sheets. For the best results, the width of a credit card is an acceptable measure.
3. Apply adhesive according to the manufacturers' specifications.
4. Roll the floor during and after installation with a 68kg roller to maximize the adhesion between the sheeting and the adhesive.
5. Complete the welding 24 hours after the installation. Groove the joins open with a suitable hand or electric groover to a width of not wider than 3mm and not deeper than 1.5mm. Weld the joins with a hot air welding gun with temperature settings of between 4-6 temperature setting and use a speed nozzle that will not burn the material or damage the coating. Use a sharp spatula and guide plate and remove the excess welding in two stages.
6. All vinyl sheeting needs to be stripped and sealed 72 hours after installation. Please ensure you use a good quality product.

2.1 **HYGROMETER**
When a hygrometer is positioned on a sub-floor surface, the reading of the relative humidity of the entrapped air space is obtained.

- A hygrometer reading of less than 70% indicates that the sub-floor is sufficiently dry for flooring to be laid upon it.
- If the hygrometer indicates a final reading of more than 70% when the initial reading of the atmosphere was less than 70% then the sub-floor is unacceptably damp and must be allowed to dry out before any flooring is installed.
- If the hygrometer indicates a final reading of more than 70% when the initial reading of the atmospheric humidity was also greater than 70%, as can occur in coastal areas, then the following applied:

1. If the final reading is significantly higher than the initial reading, then the sub-floor must be considered to be unacceptably damp.
2. If the final reading is similar to, or less than the initial reading, then the moisture content of both the atmosphere and the sub-floor are similar.

2.2 **TRAMEX CONCRETE MOISTURE ENCOUNTER (C.M.E.)**
Any reading on the C.M.E. of 60% or less indicates acceptable moisture content for the installation of any vinyl floor covering.

3. Floor Preparation – New and Existing (old) Screeds
3.1 Use of screed smoothing compounds should be avoided except for making minor repairs, however should a full skim be required, then the most common method in both instances is the use of a smoothing compound e.g. **Pavelite** in combination with **Pavelite Bonding Liquid**, mixed to the correct ratio and consistency. Only recommended products, mixed strictly in accordance with manufacturers instruction should be used. Do not use smoothing compound on power floated finishes. It is recommended that in new structures the screeding should be as specified by "Tal" using "Screedmaster", the pumped method.
A badly undulating floor may require grinding by mechanical means to improve the overall levelness. Although smoothing compounds such as **Pavelite** will improve the sub-floor it will not achieve perfection.
3.2 In cases where old vinyl floor coverings have been uplifted, leaving a bitumen adhesive residue, it is recommended that a strict procedure relating to the "Preparation of Sub Floors with Bitumen Residue", be complied with.
(This method may not constitute good flooring practice, but has proved to be successful on many occasions. No guarantee is however given or implied).

4. **Construction joints (saw cuts) and Expansion Joints**
4.1Construction joints (saw cuts) in the sub-floor should be cleaned out, and the sides of the saw cut be painted with **Pavelite Bonding Liquid** and allowed to dry. The joint should then be filled with a mixture of **Pavelite** and **Pavelite Bonding Liquid**. It is advisable to slightly overfill the joints, which when dry should be rubbed down with a carborundum stone.
4.2 Expansion joints should be filled with a suitable **Sealant** to prevent the ingress of dirt. **It is bad flooring practice to lay flooring over such a joint**. The flooring should stop at the edge of the joint and cover strips placed over the joint itself. Expansion joints and cover strips should be discussed and designed by a structural engineer.

5 Correct setting out is critical, and consideration should be given to the squareness of the area. It is safest to set out from the longest outside wall.
5.1. The recommended notching for a trowel to spread adhesive is a V notch of 1,5 x 1,5 x 1,5mm at 4,00mm centres. Consideration should however be given to the porosity of the sub-floor. Ensure the use of the recommended adhesive with the appropriate flooring. **Do not** spread the adhesive over a larger area than can be covered within the working/open time of the adhesive.
5.2 All installations must be rolled with a 68kg three sectional articulated metal floor roller on completion, within the working time of the adhesive.
5.3 Welding of sheeting is to be done only after 24 hrs after installation.
5.3. a. Trimming
While the welding rod is still warm, trim off most of the top half using a sharp spatula and spatula guide which fits over the welding rod. Carry out the final trimming using the spatula knife only, when the welding rod has cooled.
5.3.b **Glazing**
The trimmed welding rod will tend to soil more rapidly than the sheeting. It is therefore Important to glaze the surface of the trimmed welding rod.

6. After installation the flooring should be adequately protected, preventing damage caused by other trades working on the site.

7. The completed floor should not be washed or polished for a period of 72 hours after the installation in order to allow the adhesive to cure. This period will vary from one adhesive to another.
7.1 The vinyl floor covering must be cleaned with an approved water based floor Stripper, in order to achieve an acceptable standard of cleanliness for sealing. Avoid excessive use of water at all times

7.2 Foreign matter such as paint stains, tar, etc. which may not respond to the process must be removed by other means.
7.3 Three coats of a Water Based Emulsion floor dressing, shall then be applied on completely dry surface in accordance with the manufacturer's instructions, allowing one hour drying time between the first and second application of each dressing coat.

RATES: —for all floor coverings are to include for laying as described, for cleaning down backing surfaces before laying and or all square and raking cutting and waste and fitting, fair cutting at edges where no skirting occurs, protecting from injury, and for cleaning down, etc. as described, at completion.

Rates for all wall linings are to include for laying as described, cleaning down backing surfaces before laying, sizing backing surfaces if necessary to ensure proper adhesion, all square and raking cutting and waste and fitting, fair cutting at exposed edges, bending at angles and for all narrow widths and protecting from injury and cleaning down, etc. as described, at completion. Wall linings in widths not exceeding 300mm to returns, reveals and the like have not been measured separately, but have been included in the area of the general items of wall linings and rates must include or this.

Rates for skirting, stair nosing, edging strips, etc. is to include for fixing as described, cutting to lengths and fitting at intersections, mitres, ends, etc. and for cleaning down at completion.

9. IRONMONGERY

Ironmongery is to be to the approval of the Department and rates are to include for fixing screws of corresponding metal and finish and for oiling and easing as required at completion.

Where catalogue references are given, the articles are to be of the brand specified or other approved.

No two-lever mortise locks are to be used.

Mortise locks, cylinder locks, cupboard locks, etc. are to differ so that no key will pass a second lock, unless otherwise specified. Where mortise locks, cylinders, locks, etc. are specified to be "en-suite" they are to be made "en-suite" in the specified number of "suites". The "suites" are to be controlled by differing sub-master keys with a grand master key controlling all "suites", and no sub-master is to pass any lock of another "suite".

All locks are to be fitted with two keys and the locks are to be stamped with consecutive numbers and the keys to each are to be stamped to correspond with the lock.

Items of ironmongery specified as chrome plated or satin chrome finish are, unless otherwise specified, to be chromium plated or satin chrome finish on solid brass.

Items of ironmongery specified aluminium are to be natural anodised.

Where items of ironmongery are specified as fixed to pressed steel door frames, the Contractor is to ensure that the suppliers of the steel frames prepare the frames for all keeps and do all mortising and drilling required and receive all information necessary regarding ironmongery. Preparation of steel doorframes for ironmongery has been measured elsewhere.

Where tests of ironmongery are described as "plugged and screwed" these are to be screwed to patent fixing plugs of approved manufacture, and this shall include for plugging and screwing to brickwork or concrete.

Key tags are to be 40mm diameter x 3mm thick plaster of approved colour, engraved on face with the required number of letters and numerals finished in an approved colour, and the tag is to be holed for and fitted with a steel split ring and fixed to key.

Engraved plastic door signs and numeral plates are to be of 5mm thick clear plastic with square polished edges all round with an approved coloured background and sans-serif letters and numerals as described in the items, reverse engraved in the plate with splayed sides and flat reading face and finished in an approved contrasting colour. Each sign is to be twice drilled for and fixed to softwood or hardwood, unless otherwise described, with chromium plated round beaded brass screws. Unless otherwise described, the signs are to be 50mm high with 30mm high, engraved letters or numerals and are to allow a minimum margin of 25mm at both ends. All signs are to be equal to sample to be submitted to and approved by the Department.

Pictorial plastic signs are to be of 5mm thick clear plastic of the sizes stated in the items with square polished edges all round and with the silhouette described in the items applied to the back of the plate by means of the silk screen process in an approved colour and the whole back of the plate finished in an approved contrasting colour. Each sign is to be four times drilled and fixed to softwood or hardwood, unless otherwise described, with chromium plated round-headed brass screws. All signs are to be equal to sample to be submitted to and approved by the Department.

10. STRUCTURAL STEEL WORK

GENERALLY: — The fabrication, assembly and erection of structural steelwork is to be executed in accordance with SANS Specification 1200H — Structural Steelwork (a copy of which the Contractor will be required to keep on site so that it can be referred to at all times during the Contract) with the following amplifications and amendments: —

INTERPRETATIONS: — Clauses 2.1 and 2.2 refer. This preamble, together with any other supplementary preambles appearing in these Bills of Quantities shall be deemed the project specification and are the “Portion 2" referred to in Clause 2.2.

DEFINITIONS: — Clause 2.3 of SANS Specification 1200H refers. All references to the Engineer shall be deemed to mean the Department.

SUB-CONTRACTORS: —The Contractor shall either (a) have adequate satisfactory and approved experience in this type of work or (b) employ an approved specialist structural steelwork Sub-Contractor. The Contractor, in the case of (a), or the specialist Sub-Contractor, in the case of (b), shall employ at all stages of the Works both on and off site a competent Supervisor experienced in the work.

MATERIALS: — Unless otherwise shown on the drawings or hereunder, all rolled sections shall be hot rolled mild steel, and all materials shall comply with one of the following: —

a) Weldable Structural Steels to SANS 4360:
b) Hollow sections to SANS 4848 Part 2 and SANS 6323.
c) Cold rolled sections to SANS 2994.
d) Black bolts and nuts to SANS 135.
e) Precision bolts and nuts to SANS 136.
f) High-strength friction-grip bolts and nuts to SANS 1282.
g) Flat and tapered washers to SANS 1149.
h) Electrodes for welding to SANS 455.

SHOP DETAIL DRAWINGS: — The Contractor shall prepare shop detail drawings, in conformity with the details shown on the structural steelwork drawings and to show all information necessary for complete fabrication, assembly, ejection and painting. In the preparation of the shop detail drawings the Contractor is to comply with the requirements of SANS Code of Practice 0162.

The cost of preparing all necessary shop detail drawings and copies thereof is to be allowed for by the Contractor in his rates.

The Contractor shall submit two copies of his shop detail drawings to the Department for approval at least 10 days before fabrication of the member concerned is due to commence. Such approval does not imply that a complete and comprehensive check of the detail drawings has been carried out, and the Contractor shall remain responsible for ensuring that the steelwork is correctly fabricated, assembled, erected and painted.

SUBSTITUTION OF SIZES, ETC.: — No substitution of sizes or joints additional to those shown on the drawings shall be made without the prior approval of the Department. Except in cases of proven non-availability of materials specified, any additional costs involved due to substitution shall be for the Contractor's account.

FIXINGS: — The positions and manner of fixing the hangers for suspended ceiling air-conditioning ducts, pipe installations, etc. to the structural steelwork are to be approved by the Department before work on such installations commences.

FABRICATION, ASSEMBLY AND ERECTION

Welding: — shall be carried out in accordance with SANS Code of Practice 044 and the relevant recommendations of SANS Code of Practice 0162 and SANS 5135, and in any case of conflict, the SANS Codes of Practice shall be deemed as binding.

All welders employed on the Works shall be currently classified at least as grade 2 welders as defined by SANS Code of Practice 044. Should the Department so request, proof of the classification shall be produced.

Unless otherwise specified all welds are to be continuous fillet welds of 6mm leg length or not less than the thinnest plate or section being welded.

Handling, Storage and Erection: — of members is to be undertaken in such a manner to prevent overstress or damage. Should overstress or damage occur, the Department shall be informed and his instructions sought.

Storage shall be arranged such that damage to applied finishes is prevented.

All plant and equipment used in the erection of structural steelwork shall be adequate in every respect. The Contractor shall allow in his rates for all necessary temporary bracing, and for maintaining and finally removing such temporary bracing.

Fixing of Bolts, etc.: — Unless approved by the Department, no pre-drilled fixings for bolts, etc. will be permitted through hollow section members. Any hollow section member that has been drilled or punctured in any way shall be considered condemned and must be replaced to the satisfaction of the Department.

INSPECTION AND TESTING

Facility for Inspection: — The Contractor shall afford to the Department all reasonable access to inspect the steelwork at any stage of its fabrication, and shall give due notice before delivery of steelwork to the site to allow inspection and tests to be conducted if so required by the Department.

Cost of Tests: — The cost of all tests required by the Department shall be borne by the Administration, except that the costs of the following tests shall be borne by the Contractor:-
(a) Testing of welders and equipment
(b) Such tests (including load tests) as may be necessary by failure on the part of the Contractor to meet the requirements of the specification.

Procedure in the Event of Failure: — In the event of a failure of a test, the Contractor shall

either replace the defective item or prove its sufficiency by means of a load test carried out in accordance with Appendix B of Chapter 6 of the South African Standard Building Regulations. If so required by the Department the Contractor shall also demonstrate by means of tests at his own cost that all like members meet the requirements of the Specification.

PRIMING OF STRUCTURAL STEELWORK

General

(a) Painting conditions.
No painting shall be undertaken when one or more of the following conditions exist: —
(i) The atmospheric or steel temperature is below 10^0 C,
(ii) The atmospheric or steel temperature is expected to fall below 7^0 C before the paint is dry,
(iii)The atmospheric or steel temperature is high enough to cause damage to the paint film,
(iv) In fog or mist,
(v)The relative humidity is greater than 90 *%,*
(vi) Surfaces are or will be wet or damp from rain or other causes,
(vii) Surfaces are contaminated by dirt, dust, grease, oil or other matter detrimental to painting,
(viii) Wind will deposit dust onto un-dried surfaces.

(b) Extent of shop painting.
All surfaces shall be primed as described in the shop except: —
(i) Those to be encased in concrete which are to be left as prepared metal; unless otherwise specified
(ii) Contact surfaces of high strength friction-grip bolt connections which are to be left as prepared metal
(iii) Edges or faces yet to be welded which are to be left as prepared metal over sufficient width from the weld to avoid contamination of the weld or damage to the paint by the effect of welding.

(c) Paint identification, storage and preparation.
All paint shall be supplied in unopened original containers showing the manufacturer's name and trademark date of manufacture and the relevant SANS or other specification number.

No paint shall be used past its maximum life span but otherwise oldest paint shall be used first. Containers shall not be opened until required and opened containers shall be used before unopened containers

Before use, paint shall be thoroughly stirred and prepared in accordance with manufacturer's instructions.

(d) Thinning.
No paint shall be thinned except strictly in accordance with manufacturer's instructions.

(e) Dry film thickness.
Where not specifically later stated this shall be in accordance with manufacturer's instructions for spreading rates. A tolerance of approximately 10% of that thickness will be allowed.

(f) Touching-up surfaces.
Surfaces shall be protected against damage, but should this occur, then the paint shall be rubbed down over the damaged and surrounding area to a sound surface and then restored by re-applying the removed coat properly feathered in with the existing.

Upon completion of site connections, these connections shall be stripe painted with the specified primer before any further painting is carried out.

Class P1 Preparation and Priming Coat: — Unless otherwise specified, rates for structural steel-work are to include for Class P1 Preparation and Priming Coat as follows:-

(i) Surfaces are to be cleaned in accordance with SANS Code of Practice 064 to remove all rust, scale, grease, oil, etc. endeavouring to bring the surface to a bright metallic condition, and painted, unless otherwise specified, with one coat of red -oxide zinc chromate primer in accordance with SANS Specification 909 prior to despatch from the works.

(ii) Upon delivery to the site and again after erection any bared or damaged surfaces are to be made good with similar primer.

The Contractor is advised that the finishing coats of paint to be executed after the erection of the structural steelwork have been measured elsewhere.

Class P2 Preparation and Priming Coat: — Where specified, rates for structural steelwork are to include for Class P2 Preparation and Priming Coat as follows: —

(i) Surfaces shall be thoroughly cleaned by sandblasting to Swedish Standard SIS 055900 standard Sa 2½ to give minimum peak to valley profile of 50 micrometer when measured by SANS Draft Test Method No. 772.

(ii) Surfaces shall be blown thoroughly clean with compressed air and within four hours of sandblasting, one coat of "Plascon SN 162 Ironguard-4-Zinc" or other approved primer of minimum dry film thickness of 75 micrometer shall be applied by pressure pot spray system in accordance with the manufacturer's instructions in the shop.

(iii) Upon delivery to the site and again after erection, any bared or damaged surfaces are to be made good with similar primer.

The Contractor is advised that the finishing coats comprising one intermediate coat and one finishing coat of chlorinated rubber paint to be executed after the erection of the structural steelwork have been measured elsewhere.

Class P3 Preparation and Priming Coat: — Where specified, rates for structural steelwork are to include for Class P3 Preparation and Priming Coat as follows: —

(i) Surfaces shall be thoroughly cleaned by sandblasting to Swedish Standard SIS 055900 standard Sa 2½ to give maximum peak to valley profile of 50 micrometer when measured by SANS Draft Test Method No. 772.

(ii) Surfaces shall be blown thoroughly clean with compressed air and within four hours of sandblasting, one priming coat of "Epidermix 352" or other approved epoxy coal tar of minimum dry film thickness of 75 micrometer shall be applied in the shop.

(iii) Upon delivery to the site and again after erection, any bared or damaged surfaces are to be made good with similar primer.

The Contractor is advised that the finishing coat comprising a further coat of epoxy coal tar to be executed after the erection of the structural steelwork has been measured elsewhere.

MEASUREMENT AND PAYMENT: — The provisions and Clause 8 will **NOT** apply and the system of measurement which is adopted in these Bills of Quantities is the only system of measurement which will be recognised in this Contract.

RATES FOR STRUCTURAL STEELWORK: — Rates for structural steelwork are to include for all necessary cutting to lengths, splay cut ends, shaping, holing, tapping, threading, forging, turning, assembling, welding, and fixing in position.

11. METALWORK

PROPRIETARY MATERIALS: — Where proprietary materials are specified, the materials used are to be of the type, specified or other approved by the Department.

RATES: — for all metalwork, unless otherwise stated, are to include for cutting to length, shaping, turning, threading, forging, fitting, assembling, riveting, welding, welded running joints, filing smooth, also for all screws and holes and hoisting and fixing in position. All screwed work is to have full threads.

WELDING AND BRAZING: — Where items are described as welded or brazed, rates must include neat welding or brazing by experienced workmen using a recognised process and for cleaning and filing or grinding off smooth, all to approval. All welding is to be continuous unless otherwise described.

SCREW FIXINGS: — Where items are described as tap screwed, grub screwed, set screwed, etc. rates must include for the necessary screws, for drilling all components and for tapping the components where necessary to receive such screws.

PIPE MEMBERS: — All galvanized mild steel pipe members are to be “medium” pipes complying with SANS 1387. Diameters of pipes, unless otherwise stated, are normal internal diameters.

PRIMING OF STEELWORK: — All items of fabricated mild steel except where described to be galvanized, are to be cleaned in accordance with SANS Code of Practice 064 to remove all scale, rust, grease, oil, etc. endeavouring to bring the surface to a bright metallic condition, and painted, unless otherwise specified, with one coat of red-oxide zinc chromate primer in accordance with SANS Specification 909 prior to despatch from the works.

GALVANISING OF STEELWORK: — All steel surfaces described to be galvanized are to be thoroughly sand, grit or steel shot blasted to white metal in accordance with SANS Code of Practice 064 and fluxed ready for galvanising, and the completed unit is to be hot dip galvanized after fabrication in accordance with SANS Specification 763 for general applications on the relative thicknesses of metal.

The zinc coating shall be continuous and of even thickness over all surfaces entirely free of bare spots, dull, rough patches, blisters and other imperfections and shall show no signs of peeling. Where site welding has to be done, the welds are to be properly cleaned down and cold galvanized to the approval of the Department.

If requested by the Department, the manufacturer shall carry out tests to prove that the requisite mass / thickness of zinc coating is applied and that it is of uniform thickness. The tests shall be made by attaching a test piece of mild steel, approximately 250 x 25 x 6mm, by means of wire, to an article being galvanized, and subjecting the test piece to the same cleaning, fluxing and galvanising treatment as the article being galvanized, and at completion, the test piece tested by a method approved by the South African Bureau of Standards, the cost of which will be borne by the Contractor.

CHROMIUM PLATING OF STEELWORK: — All items of fabricated mild steel described to be chromium plated are to be properly de-greased, cleaned and polished perfectly smooth before plating and all in accordance with SANS Specification 728. All items are to be first nickel-plated then chromium plated to provide a bright mirror finish and all plating is to be equal to sample to be submitted for the necessary approval by the Department.

PRESSED STEEL DOOR FRAMES: — shall be manufactured from mild steel sheet 1.60mm thick for single rebated frames and 1.20mm thick for double rebated frames. Rebates shall be suitable for 42mm thick doors and fanlights.

The sections are to be accurately bent to form the profiles. Corners are to be mitred and welded and reinforced at back with 1.60mm thick steel angle sections. Transoms for

fanlights are to be let into the jambs and welded. All welds are to be solid and cleaned off flush, leaving a perfect outside finish.

Each frame is to be fitted with one pair of sturdy angle or channel section tie bars at base, welded below the frame, and where required for additional strength, cross struts of the same section are to be welded between and at right angles to the main tie bars. Each frame is also to be fitted with one 'diagonal brace as temporary support, standard 230mm long corrugated adjustable building-in lugs at jambs, three rubber shock absorbers in rebate of lock jambs of frames for single doors and one rubber shock absorber, for each leaf in the rebate of the head or transom of frames for double doors.

All frames are to be primed on all surfaces with an approved red oxide zinc chromate priming coat in accordance with SANS Specification before leaving the manufacturer's works, unless specified to be hot dip galvanized, and rates are to include for touching up where necessary with similar primer after building in.

Where frames are specified to be galvanized they are to be hot dip galvanized after manufacture in accordance with the relevant provisions of SANS Specification 763 for general applications on the relative thicknesses of metal.

Frames, unless otherwise described, are to be fitted with one and a half pairs of 100mm five-knuckle loose pin steel hinges, unless otherwise specified for each door or each leaf of double door and with one pair of 75mm five-knuckle loose pin steel hinges for each fanlight. The three-knuckle leaf of each hinge is to be welded into the frame or transom.

Where frames are described to be fitted with brass butts, the frames are to be checked out and fitted, unless otherwise specified, with one and a half pairs of 100mm double bronze washered brass butts for each door or leaf of double door, unless otherwise described, as one pair of 75mm brass butts for each fanlight, with open leaf of each butt secured to the frame or transom by means of 6mm diameter countersunk headed brass set screws screwed to and including a 3mm thick steel backing plate of suitable size welded to frame or transom and drilled and tapped to receive the set screws.

Where frames are described to be fitted with aluminium hinges the frames are to be checked out for and fitted, unless otherwise specified, with one and a half pairs of 100mm five-knuckle aluminium hinges of 6082 alloy with nylon bushes for each door or leaf of double door, unless otherwise described, and one pair of similar hinges to each fanlight, with the three-knuckle leaf of each hinge secured to the frame or transom by means of 6mm diameter countersunk headed stainless steel set screws screwed to and including a 3mm thick steel backing plate of suitable size welded to frame or transom and drilled and tapped to receive the set screws.

Where frames are to be prepared for the top centres of floor spring hinges, a 6mm thick steel backing plate of suitable size is to be welded into the back of the frame and drilled and tapped to receive the fixing screws of the top centre.

The preparation of frames or all items of ironmongery, other than butts, has been measured separately and the rates against these items are to include for all drilling, mortising, tapping for screws, etc. required for the fixing of keeps, brackets, etc. of the items of ironmongery described. Preparation of frames for locks and latches is to include, in addition to the above, for recessing and fitting the frames with and including standard keeps and adjustable striking plates to suit the types of locks and latches used and with totally enclosed mortar guards 1, 15 metre high above finished floor.

Door and fanlight sizes are given to the nearest 10mm. The building in of frames has been measured separately.

STAINLESS STEEL DOOR FRAMES:- shall be manufactured from grade 304 stainless steel sheet 1.60mm thick for single and double rebated frames to profiles as per detailed drawings. Rebates shall be suitable for 42mm thick doors and fanlights. Stainless steel

frames to be used only in Patient Treatment facilities.

PRESSED STEEL CUPBOARD DOOR FRAMES: — shall be manufactured from 1.20mm thick mild steel sheet standard sections, having rebates for 42mm thick doors, and fitted with transoms and/or mullions where required and with sill section allowing the cupboard doors to be taken down to general floor level with the floor level inside cupboards not less than 12mm above general floor level. The frames are to be 102mm wide overall.

The sections are to be accurately bent to form the profiles. Corners are to be mitred and welded and reinforced at back with 1.60mm thick steel angle sections. Transoms, mullions and sills are to be neatly fitted at intersections and welded. All welds are to be solid and cleaned off flush, leaving a perfect outside finish.

All frames are to be fitted with rubber shock absorbers to the lock jambs of single doors, and to the head, transom and sill of double doors. Each door is to be fitted with standard corrugated adjustable building in lugs at jambs.

All frames are to be primed on all surfaces with an approved red-oxide zinc chromate priming coat in accordance with SANS Specification 909 before leaving the manufacturer's works, unless specified to be hot dip galvanized, and rates are to include for touching up where necessary with similar primer after building in.

Where frames are specified to be galvanized they are to be hot dip galvanized after manufacture in accordance with the relevant provisions of SANS Specification 763 for general applications on the relative thicknesses of metal.

Frames are to be fitted with one pair of 100mm five-knuckle loose pin steel hinges for each lower door or each leaf of lower double door and with one pair of 75mm five-knuckle loose pin steel hinges for each upper door or each leaf of upper double door. The three-knuckle leaf of each hinge is to be welded into the frame or mullion. Frames for single cupboard doors shall be prepared for locks or catches as specified and the frames for double doors are to be prepared for two barrel bolts for the first closing leaf of lower doors and one barrel bolt for the first closing leaf of upper doors.

Overall sizes are given to the nearest 10mm. Building in of the frames has been measured separately.

STEEL WINDOWS AND DOORS: — shall be in accordance with SANS Specification 727 and the frames are to be provided with fixing lugs or are to be holed for screwing as required.

Industrial type windows are to be suitable for glazing from the inside and all other windows from the outside, unless otherwise described.

Side hung and vertically pivot hung sashes shall open to at least 90 degree horizontally pivot hung sashes to at least 80 degree and bottom hung sashes to 30 degree. Unless otherwise stated, hinges for side hung opening out sashes are to be of the projecting type for easy cleaning.

All opening sashes are to have polished brass furniture.

The transoms and mullions of all purpose-made windows and doors are to be equally spaced between the outer frames of the windows and doors to form openings of equal size. Where this is not the case either the width or the height of the opening is stated, unless otherwise stated, the fixed lights and sashes of all purpose-made windows are to be in one square and the sashes and doors are to open out.

Windows and doors, unless otherwise specified, shall be of "one piece" construction. Composite windows and doors are to be supplied complete with all necessary standard coupling transoms or mullions.

Stock and purpose made residential type steel windows and school type windows of residential section shall be constructed of standard 25mm steel sections and of metal not less than 3mm thick.

Stock and purpose made industrial type steel windows shall be constructed with main frames of standard 35mm steel sections and of steel not less than 3mm thick, with sashes of standard 25mm steel sections and of steel not less than 3mm thick.

“Universal” sections, where specified, shall be not less than 33mm wide (measured over one opening section only) and of metal not less than 4mm. thick, and with all sight lines maintained (whether consisting of all fixed lights, all opening sashes, or portions of both) and with all glass in the same plane.

Stock and purpose made steel doors, sidelights and fanlights, shall be constructed with the doors of “Universal” sections as before described and the sidelights and fanlights of standard residential sections as before described. Bottom openings in doors and sidelights shall be fitted with kicking plates of one thickness of 1.60mm mild steel sheet fixed with metal beads. Frames of outward opening doors shall be fitted with bottom sills of door framing section (stepped sills) and of inward opening doors with metal ties welded to frames for embedding in threshold (flush sills)

Top Hung Sashes: — are to open out on a pair of steel hinges having brass pins and washers and fitted with brass peg stay, steel peg and locking bracket.

Outward Opening Side Hung Sashes: — are to open out on a pair of steel projection hinges having brass pins and washers and fitted with brass two-point handle and brass striking plate and brass sliding stay with friction fastener.

Inward Opening Side Hung Sashes: — are to open in on a pair of steel hinges having brass pins and washers and fitted with brass single point handle and steel engaging hook and brass sliding stay with friction fastener.

Bottom Hung Sashes: — are to open in on a pair of steel hinges having brass pins and washers and fitted with steel concealed side arms with brass guides and brass spring catch for long arm or hand operation and steel catch plate.

Horizontally Pivot Hung Sashes: — are to have brass adjustable friction ring centres and fitted with brass spring catch for long arm or hand operation and steel catch plate.

Projected Out Sashes: — are to be balanced on steel concealed side arms, the top of the sash fitted with spring loaded brass shoes to slide in brass guides and fitted at bottom with brass handle and brass striking plate.

Doors: — are to be hung on one and a half pairs per leaf of steel projection hinges with brass pins and washers and fitted with mortise lock set as specified, and each lock is to be provided with two keys.

Brass concealed bolts are to be fitted at top and bottom of meeting edge of first closing leaf of double doors. Sidelights and fanlights are to be hung as described for windows.

Adjustable Louver Sets: — are to be natural anodised aluminium louver sets of approved manufacture consisting of head and sill weather strips complete with neoprene gaskets and two jamb strips each fitted with louver brackets with spring loaded clips for the specified width of glass louver blades complete with tilt bars and operating lever handles. Where openings are not of a height to suit standard width louver blades an alternate head section with static clips must be provided to take a fixed louver blade of the required width. The louver sets are to be screwed to the steel window frame with stainless steel self-tapping screws and all portions of the louver set which come in contact with the window frame are to be insulated with approved pressure sensitive PVC tape to prevent electrolytic corrosion.

Burglar Bars: — are to be standard type burglar bars formed of 20 x 5mm mild steel bars riveted at intersections and riveted at ends to the window frames. The burglar bars to the small-pane type windows are to line through with the glazing bars and windows of the horizontal-pane type or of the no-glazing bar type are to be fitted with burglar bars which are divided as for the small-pane type window.

Fly screens: — are to be standard type fly screens suitable for residential opening-out type steel windows, unless otherwise described, and are to be constructed of stove enamelled pressed steel frames fitted with 0.25mm thick mosquito-proof mesh glass-fibre gauze. The fly screens are to be clipped onto the inner face of the steel window after all painting is completed.

All steel windows and doors are to be primed on all surfaces with an approved red oxide zinc chromate priming coat in accordance with SANS Specification 909 before leaving the manufacturer's works, unless specified to be hot dip galvanized, and rates are to include for touching up where necessary with similar primer after building in.

Where steel windows and doors are specified to be galvanized they are to be hot dip galvanized in accordance with the relevant provisions of SANS Specification 763 for general applications on the relative thicknesses of metal.

Loose metal glazing beads, where specified, are to be of an approved type and size, and are to be fixed with screws set in the correct positions for the type of glazing to be used, and neatly mitred at angles.

Immediately the windows and doors have been delivered on site, they are to be thoroughly overhauled and all necessary adjustments or repairs are to be made before they are fixed in position. A further inspection is to be made after building in and any further servicing required must be carried out in order to leave windows and doors in a satisfactory condition after glazing is completed.

All glass and glazing has been measured elsewhere.

Sizes of windows and doors are given to the nearest 10mm. The building in of windows and doors has been measured separately.

STAINLESS STEEL: — is to be of the thickness and grade specified and unless otherwise stated is to be buffed to an even satin finish to the approval of the Department.

All welding to stainless steel shall be by argon arc process and where filler rods are used these are to have properties not less than those of the parent metal. All welds are to be ground off smooth and uniform and the whole buffed to an even finish all over. Stainless steel is to be cut and bent in such a manner that a minimum of welding is required.

Where bending is required, all external angles are to be arras rounded and all internal angles are to be radiused.

All stainless steel work is to be of the highest quality and executed by specialists in this type of work and to the approval of the Department.

Note that where stainless steel fittings are specified and support work or fixings with bolts, nuts, rivets, etc, are required / specified, these fixings and support work are to be of stainless steel of the same rating / grade as the equipment specified.

ALUMINIUM AND ANODISED ALUMINIUM: — is to be of the brand specified or other approved and of 6063-TF or equivalent quality and temper.

Aluminium bars and sections shall comply with the relevant clauses of SANS 1476, extruded tube and hollow sections with the relevant clauses of SANS 1474, and sheet and

strips with the relevant clauses of SANS 1470. All alloys to be anodised are to be of anodising quality.

Aluminium is to be free from flaws, hammer and die markings or other imperfections.

Anodising of aluminium is to be carried out in accordance with SANS Specification 999 by an approved process. The average anodic film thickness shall be 25 micrometer, and at no point should the anodic film thickness fall below 22 micrometer or be thicker than 30 micrometer.

Prior to anodising, all surfaces are to be de-greased and cleaned, all irregularities removed and flushed off smooth and buffed where necessary.

All anodised aluminium must be coated with a suitable “non-yellowing” methylcrylate lacquer film, approved by the Department, over the entire surface. The lacquer film must be continuous and of a uniform average thickness not less than 10 micrometer. The lacquer thickness must be determined by use of a film meter or other instrument methods as described in ASTM B244-49T. Rates for anodised aluminium must include for this protective coating.

Before the work is put in hand, samples of finish are to be submitted to the Department for approval, and all finished work is to be equal in all respects to the approved samples.

The Contractor shall provide all samples required for testing in accordance with SANS Specification 999. If required, tests on the anodic film are to be carried out at the works of the anodised to verify that the work conforms to SANS Specification 999, the cost of which will be borne by the Contractor.

The surfaces of all aluminium which are jointed to or are in contact with other materials when fixed, particularly ferrous metals, are to be suitably insulated to prevent electrolytic corrosion.

Joints in all aluminium members are to be neatly formed in an approved manner with screw heads, pins, rivets, etc. concealed so that the joints are practically invisible. Screw or bolt jointing is to be kept to a minimum and will be permitted only when welding is impracticable. Unless otherwise described, stainless steel screws or bolts are to be used for jointing and fixing aluminium work. Welded joints are to be formed by argon arc process using SANS 1476/NS6 welding rods and finished off smooth.

Welding is to be executed in such a manner as not to affect the colour of the material or the anodic coating.

Exposed heads of screws, pins, rivets, etc. in coloured anodised aluminium are to be touched up with enamel paint to match the coloured anodised finish.

No deviation may be made from the general requirements or dimensions, but improvements in the general construction and design affecting neatness, strength or durability may be introduced. If any deviation is proposed, the Contractor must submit detailed drawings showing the particular construction and form or section he proposes to use and such drawings, details and samples of fittings, etc. are to be approved by the Department before manufacture is commenced and every facility must be given for the work to be inspected during manufacture.

No work may be fixed in position until it has been inspected and approved. Anodised aluminium work must be erected as near to the end of the Contract period as possible, to minimise the danger of damage or deterioration.

All work is to be suitably protected during building operations and left in a clean and satisfactorily finished condition on completion. In particular, all anodised aluminium work must be protected against damage, and against deterioration or discolouration caused by

mortar droppings, wax, paint, etc. all to the entire satisfaction of the Department. All work so damaged, deteriorated or discoloured must be replaced at the Contractor's expense.

Rates for aluminium work are to include for necessary cutting to lengths, shaping, turning, threading, forging, fitting, assembling, riveting, welding, welded running joints, filing smooth, also for all screws and holes and hoisting and fixing in position. All screwed work is to have full threads.

ANODISED ALUMINIUM WELDED WINDOWS AND DOORS: — are to be of an approved manufacture and design.

Windows and doors are to be fabricated from Medium Universal equal leg sections, unless otherwise specified, measuring 33mm over one opening section and not less than 4mm thick through the flanges and not less than 4.75mm through the web, unless otherwise stated.

The aluminium sections are to be of approved manufacture and of 6063-TF or equivalent quality and temper and are to be anodised after manufacture to the approval of the Department. Welds are to be electrically flash butt resistance welded, properly ground and cleaned off to give a uniform appearances.

Anodising, etc. is to be carried out as before described.

All windows and doors are to be suitable for internal glazing and are to be fitted with approved anodised aluminium glazing beads of the "clip on" type. Drilling for the fixing of glazing beads is to be done to suit the thickness of the glass used.

The frames are to be perfectly flat, square, butt-welded at joints (mechanical joints will not be permitted) and all opening sashes must fit perfectly on all faces and open or close freely without binding at any point. The glazing bars must be continuous with continuous intersections (mitred intersections will not be permitted) with ends scribed and fitted to the frames with shouldered ends passed through and riveted over. The sight lines of the main frame, whether consisting of all fixed lights, all opening sashes or portions of both and the glass plane must be the same throughout each window.
Weathering on sections is to be solid extruded with the sections (screwed or riveted on strips will not be permitted) except weather bars to sills of inward opening sashes which must be welded on and not screwed or riveted except in the approved designs of built-up transoms.

No steel is to be used in the manufacture of the windows unless it is stainless steel of quality to A.I.S.I. Type 316. All fittings, butt hinges, screws, nuts, bolts, etc. are to be of high quality aluminium or other approved non-corrosive material compatible with aluminium and of sufficient strength to perform the functions for which they are used. The handles, sliding stays and peg stays are to have nylon washers, bushes and pressure pads and are to be secured to the frames with screws having riveted ends. Pop rivet fixings will not be permitted.

The transoms and mullions of all purpose-made windows and doors are to be equally spaced between the outer frames to form openings of equal size. Where this is not the case, either the width or the height of the opening is stated. Unless otherwise stated, the fixed lights and sashes of all purpose-made windows and doors are to be in one square and the sashes and doors are to open out.

Frames must be provided with suitable fixing lugs bolted on to frame with aluminium alloy bolts or are to be holed for screwing as required with lugs or holes spaced one near top, one near bottom and not more than 750mm apart intermediately each side of frame. Frames more than 900mm wide are to be provided with similar fixings to top and bottom and not more than 750mm apart.

All composite windows, doors, etc. are to be supplied with suitable and approved coupling mullions or transoms. Rectangular hollow section transoms where specified are to be

25mm x 115mm in section manufactured from 3mm thick aluminium.

The Contractor must submit drawings showing details of sections he proposes to use and these drawings are to be approved by the Department before manufacture is commenced, and when requested, specimen windows and doors complete with all fittings as well as specimen coupling mullions, transoms etc. must be submitted for approval and all windows, doors, etc. supplied must conform to the approved samples.

The manufacturer of the windows and doors must supply a dimensioned set of drawings with the windows and doors, for use on the site, including clearance and strict fixing methods and details.

Windows and doors are to be delivered to the site in suitable protective wrappings or crates and are to be stacked on end and carefully handled at all times to prevent any marking or staining of surfaces.

Immediately the windows and doors have been delivered on the site, they are to be thoroughly overhauled and all necessary adjustments or repairs are to be made before they are fixed in position. A further inspection is to be made after fixing and any further servicing required must be carried out in order to leave the windows and doors in a satisfactory condition and waterproof after glazing is completed.

Side Hung Sashes: — are to open out on a pair of aluminium hinges complete with anti-friction weatherproof bushings fixed pin and nylon washers and fitted with anodised aluminium alloy sliding stay with friction fastener and an approved anodised aluminium two point handle and striking plate.

Bottom Hung Sashes: — are to open in on a pair of aluminium hinges complete with anti-friction weatherproof bushings, fixed pin and nylon washers and fitted with concealed side arms and strong lever action spring catch and keep.

Top Hung Sashes: — are to open out on a pair of aluminium hinges complete with anti-friction weather proof bushings, fixed pin and nylon washers and fitted with anodised aluminium peg stay with cranked locking stay.

Horizontally Pivot Hung Sashes: — are to be hung on a pair of approved weatherproof brass satin-chrome finished friction pivots of the greatest possible diameter permissible and fitted at top with strong lever action spring catch for long arm or hand operation and striking plate, unless otherwise stated.

Vertically Pivot Hung Sashes: — are to be hung on free pivot cups at the head incorporating nylon bearing sleeves and lever pivots at the sill and fitted with one two-point casement handle and striking plate.

Projected Out Sashes: — are to be balanced on approved concealed side arms with stainless steel shoes and channels and fitted at bottom with one approved bow handle with catch incorporated.

Projected In Sashes: — are to be balanced on approved concealed side arms with stainless steel shoes and channels and fitted at top with strong lever action spring catch for long arm or band operation and striking plate:

Doors: — are to be side hung to open out on one and a half pairs of aluminium hinges to each leaf complete with anti-friction weatherproof bushings, fixed pin and nylon washers and fitted with lock set as specified, and each lock is to be provided with two keys. Satin chrome finish flush bolts are to be fitted at top and bottom of meeting edge of first closing leaf of double doors.

Adjustable Louver Sets: — are to be approved anodised aluminium adjustable louver sets consisting of head and all weather strips fitted with neoprene gaskets and two jamb strips

each fitted with louver brackets with spring loaded clips for the specified width of glass louver blades and complete with tilt bars and operating lever handles. Where the openings are not of height to suit standard width louver blades an alternate head section with static clips must be provided to take a fixed louver blade of the required width. The sets-sets are to be tap screwed to the window frame with stainless steel self-tapping screws.

GLAZING TO DOORS / ALUMINIUM GLAZED SCREENS

No glazing permitted to any fitting below Lock Rail (ie 1,2m high.).

Burglar Bars: — are to be standard type burglar bars formed of 20mm x 5mm aluminium bars riveted at intersections and riveted at ends to the window frame with high strength aluminium rivets. The burglar bars to the small pane type window are to line through with the glazing bars, and windows of the horizontal-pane type or of the no-glazing bar type are to be fitted with burglar bars which are divided as for the small pane type window.

All exposed surfaces of anodised aluminium are to be protected by means of an approved fabric backed adhesive tape. The Contractor shall satisfy the Department that the tape he proposes to use can be easily stripped after long exposure to sunlight, and rates are to include or the final stripping of the protective tape and cleaning dawn to approval at completion.

All work is to be protected during building against deterioration or discolouration caused by mortar droppings, wax, paint, etc. and all work so damaged is to be replaced at the Contractor's expense to the approval of the Department.

All glass and glazing has been elsewhere measured. All sashes and openings, unless otherwise stated, are to be single panes without glazing bars.

All windows and doors must be fixed into preformed openings in the structure (the building-in of windows and doors will not be pen fitted) and rates are to include for supplying necessary templates for forming the openings. Fixing in position of windows and doors has been measured separately. Sizes of windows and doors are given to the nearest 10mm.

STRONG ROOM DOORS: — must comply in all respects with SANS Specification 1015 Category 1. Each door is to be provided with two keys and the keys must be forwarded by the supplier under registered cover direct to the Department, and the supplier must clearly indicate the institutions in which the door (or doors) is being installed.

BURGLAR RESISTING SAFES: — must comply in all respects with SANS Specification 751. The safes shall be "Office Safe Category 1" as laid down in SANS Specification 751. Each safe is to be provided internally with one shelf and two lockable drawers.

Where the mass of each safe is 680kg or less, provision must be made for securing it rigidly to prevent unauthorised removal; the means of securing shall be at least equal in effectiveness to that which would be provided by four 12mm bolts. Locks shall be lever locks with a minimum of six levers. Each safe is to be provided with two keys to each lock and the keys for any safe must be forwarded by the supplier under registered cover direct to the Department, and the supplier must clearly indicate the institution in which the safe (or safes) is being installed.

ADJUSTABLE LOUVER GEAR SETS: — are to be approved natural anodised aluminium adjustable sets consisting of head and sill weather strips fitted with neoprene gaskets and two jamb strips and fitted with sets brackets with spring loaded clips for the specified glass sets blades and complete with tilt bars and operating handles. Where the openings are **not** of a height to suit standard width sets blades an alternate head section with static clips must be provided to take a fixed sets blade of the required width.

RATES: — are to include for fixing in accordance with the manufacturers instructions for screwing head and sill weather strips and jamb strips with stainless steel screws to frames (Elsewhere measured) and for oiling and easing at completion.

12. PLASTERING

MIXING
The mixing of the materials is to be done on a hard surface.
Once all materials have been mixed, they are not to be remixed with new materials added after 5 (five) hours.

MATERIALS
Stone Chippings: — are to be approved clean stone chippings of the sizes stated complying with SANS Specification 1083.

River Sand: — for floor finishes and screeds is to be clean, sharp, coarse sand free from all impurities, washed if so directed and complying with SANS Specification 1090.

Plaster Sand: — is to be clean, sharp, free from all impurities, washed if so directed and is to comply with SANS Specification 1090.

Cement: — unless otherwise specified is to be Portland cement of normal setting quality, is to comply with SANS Specification 471, and must be used fresh. Cement containing more than 15% blast furnace slag will not be permitted to be used.

Lime: — is to comply with SANS Specification 523.

Water: — is to be clean, fresh and free from injurious amounts of acids, alkalis and other organic substances.

MEASUREMENT OF CONSTITUENT PARTS OF FLOOR FINISHES, TOPPINGS, SCREEDS AND PLASTER FINISHES: — Cement, sand and stone chippings are to be measured exactly by means of gauge boxes or purpose made wheelbarrows. Part filling or heaping of normal wheelbarrows will not be permitted.

Water is to be accurately measured for each batch, to approval.

Waterproofing compounds, where specified, are to be added to the mixture in the proportions recommended by and in strict accordance with the manufacturer's instructions.

PREPARATION OF SURFACES: — Prior to the application of floor finishes, toppings, screeds, plaster finishes etc. the surfaces of the new or existing concrete, brickwork, etc. are to be thoroughly cleaned, chipped, hacked, sloshed, etc. as necessary to ensure a satisfactory bond. The Contractor will be held entirely responsible for the proper and adequate preparation of the surfaces and any work which results in failure in this regard must be made good at the Contractor's expense to the satisfaction of the Department.

FLOOR SCREEDS, ETC: — Cement screeds are to consist of one part cement and three parts sand, unless otherwise described, and are to be steel towelled, unless otherwise stated, to true smooth and even surfaces, free from tool marks to the satisfaction of the Department to receive the finishes stated in the items. It is recommended that in new structures the screeding should be as specified by "Tal" using "Screedmaster", the pumped method.

GRANOLITHIC FINISH TO CONCRETE FLOORS, ETC: — Float up to within 6mm of finished surface with layers on concrete approximately 10mm thick, composed of one part cement, two and a half parts concrete and three and a half parts granite or other approved hard stone chippings. Form finished surface with one part cement and one part fine granite chippings or other approved hard stone graded up to particle, which will pass a 6mm mesh brought to a smooth surface with a steel trowel. The floating and finishing coats are to be performed in one operation.

The granolithic work is to be carried out by experienced workmen and is to be laid in panels

V-jointed and not and not exceeding 6m^2 in area or as shown on drawings or described in the Bills of Quantities.

Thin strips if wood or other suitable materials are to be laid between panels to break contact.

Where granolith is described to be tinted, the requisite quantity of oxide of iron or other colouring materials is to be mixed with the finishing thickness.

All granolithic floors, etc. are to be covered up and protected from injury and discolouration during the progress of the work.

Rates for granolithic work are to include for cleaning down and for a coat of approved wax polish or stoep reviver well rubbed in at completion.

13. PLASTER

GENERAL

Except where otherwise described, all external plaster is to be finished with a wood float and internal plaster is to be finished with a steel trowel, unless otherwise described, all to true and even surfaces, free from tool marks and other defects to the satisfaction of the Department. No distinction has been made for brick or concrete surfaces.

CEMENT PLASTER

External cement plaster to wall is to consist on one part cement and four parts sand.

External cement plaster to ceilings is to consist of one part cement and three parts sand.

Internal cement plaster to walls is to consist of one part cement and five parts sand.

Internal cement plaster to ceilings is to consist if one part cement and three parts sand.

One coat cement plaster to walls shall not be less than 13mm or more than 16mm in thickness, and one coat cement plaster to ceilings shall not be less than 10mm or more than 13mm in thickness, unless otherwise described.

Where plaster is described as undecorated, the same type of approved sand the same brand of cement is to be used throughout to maintain a uniform colour and texture.

BARIUM PLASTER

Barium plaster shall consist of two coats plaster, the first coat 13mm thick consisting of one part cement and five parts sand, and the second coat 6mm thick consisting of one part cement and five parts Barium Sulphate. (This is to be applied only to X-Ray Room walls where holed bricks have been used).

All surfaces are to be plastered in one operation from ceiling to floor and corner-to-corner; breaks are to be made only in corners or at junctions of walls and ceilings.

CURING, PROTECTION, ETC.: — All floor finishes, paving, plaster finishes and screeds are to be properly cured to approval and all cracks, blisters and other defects which may occur are to be made good and the whole left in a satisfactory-condition at completion.

The finished surfaces are to be properly protected from damage and cleaned down at completion.

RATES: — Rates for floor finishes and screeds are to include for preparation of new or existing surfaces, dressing to falls where required, V-joints where specified, curing, protecting from damage and cleaning down at completion.

Rates for skirtings, risers, etc. are to include for internal angles at junction with floor, treads, etc. to be square or coved to not more than 50mm girth and in addition are to include for mitres, stops, etc. except where given separately in terms of the Standard System of Measuring Builders' Work.

Rates for plaster finishes are to include for preparation of new or existing surfaces, curing, protecting from damage and cleaning down at completion.

Rates for plastering are to include for internal angles to be square or coved to not exceeding 50mm girth.

Rates for rounded angles, fair edges and arrases and the like are to include for mitres, stops, etc. except where given separately in terms of the Standard System of Measuring Builders' Work.

Rates for mouldings, projecting bands, coves, weatherings and the like are to include for dubbing out.

Rates are to include for cutting back against frames and for V-joints cut where concrete abuts brickwork.

Rates generally are to include for all sundry making good and working around pipes, balusters, etc.

GENERALLY

Narrow Widths
Items described as "Extra over for narrow widths" include for all reveals, edges, soffits, treads, risers, etc. not exceeding 500mm wide, narrow widths not exceeding 500mm wide in general surfaces caused by openings or projections, all of which have been included in the areas of horizontal or vertical surfaces. No distinction has been made for finishes of differing thicknesses.

14. TILING

MATERIALS

River Sand: —is to be clean, sharp, coarse sand, free from all impurities, washed if so directed and complying with SANS Specification 1090.

Plaster Sand: — for wall backings is to be clean, sharp, free from impurities, washed if so directed and complying with SANS Specification 1090.

Cement: —unless otherwise specified, is to be Portland cement of normal setting quality complying with SANS Specification 47l and must be used fresh. Cement containing more than 15 % blast furnace slag will not be permitted to be used

Water: —is to be clean, fresh and free from injurious amounts of acids, alkalis and other organic substances.

MEASUREMENT OF CONSTITUENT PARTS OF BACKINGS, ETC.: — Cement and sand are to be measured exactly by means of gauge boxes or purpose made wheelbarrows. Part filling or heaping of normal wheelbarrows will not be permitted:

Water is to be accurately measured for each batch to approval.

Waterproofing compounds, where specified, are to be added to the mixture in the quantities recommended by and in strict accordance with the manufacturers' instructions.

PREPARATION OF SURFACES: — Prior to the application of the backing for tiles, the surfaces of the new or existing concrete, brickwork, etc. are to be thoroughly sloshed, etc. as necessary to ensure a satisfactory bond. The Contractor shall be held responsible for the proper and adequate preparation of the surfaces and any work which results in failure in this regard must be made good at the Contractor's expense to the satisfaction of the Department.

GLAZED CERAMIC WALL TILES AND FITTINGS: — shall comply with SANS Specification 22 of selected grade, free from defects and blemishes and of uniform colour.

Rates are to include for either bedding tiles on and including a solid cement mortar backing consisting of one part cement to three parts sand on brickwork or concrete, or fixed with an approved tile adhesive on and including a coat of cement plaster consisting of one part cement to five parts sand and finished to a surface to receive tiles.

Tiles are to have vertical and horizontal joints continuous with all joints solidly flushed up in neat white cement.

MOSAICS: — Glass or ceramic mosaics are to be of approved South African manufacture of the sizes and colours specified, fixed to paper panels for ease of handling.

Mosaics are to be bedded to a true even surface on and including a solid cement mortar backing consisting of one part cement and three parts sand on brickwork or concrete, or fixed with an approved mosaic adhesive on and including a coat of cement plaster consisting of one part cement to three parts sand finished to a surface to receive mosaics.

After setting, the paper panels are to be removed and all joints are to be solidly flushed up in neat white cement.

Samples of mosaics are to be submitted to the Department for approval before any work is put in hand.

UNGLAZED CERAMIC FLOOR TILES AND FITTINGS: — are to be unglazed acid and alkali resistant tiles and fittings of the types specified in the items, and of approved manufacture, uniform in size, shape and colour, free from cracks, twists and other defects and equal to samples to be deposited with and approved by the Department.

Floor tiles are to be laid with maximum 10mm wide joints continuous in both directions on and including a 15mm thick cement mortar bed consisting of one part cement to three parts sand, unless otherwise specified, to true levels and grades with the joints raked out and grouted up solid and flush pointed with an approved epoxy jointing compound.

Floor tiles are to be set out so as to have no long edges of tiles cut to suit room size.

RATES: — for tiles, mosaics, etc. are to include for all necessary preparation of surfaces, for laying in accordance with the manufacturer's instructions, all square cutting and waste and fitting, protecting from damage and cleaning down at completion.

Rates for tiles are also to include for laying, bedding, jointing and pointing as described and in accordance with SANS Code of Practice 0107 where applicable.

Rates for treads, risers, sills, copings, cappings, skirting etc. are to include for pointing to exposed edges and projecting soffits.

No distinction has been made for brick or concrete surfaces.

TRANSITION TRIMS:-
Aluminium Wide Tile-In Ramp splayed transition trims to be used at junction between ceramic / porcelain tiles and vinyl sheeting.

MOVEMENT JOINTS:-
Aluminium Structural Screed joints bolted to slab to be capable of total movement of minimum of 5mm either way with flexible PVC Hospital Insert.
Movement joints to be in high traffic area's as "Migua" FV35/1500 or "Kirk" ASSJ390H of approved height with hospital insert bolted to slab before screeding.
Metal movement joints in low traffic area's with hospital insert strips..

15. DRAINAGE AND PLUMBING

GENERALLY: —The Standard Preambles for other trades, with reference to Excavations, Concrete, Brickwork and Plastering, and, in particular for the full description intent and meaning of the classification for excavations, are to apply equally to this trade.

LICENSED DRAINLAYERS AND PLUMBERS: — Only licensed drain layers shall be employed on any drainage work and licensed plumbers on plumbing work.

SUBSOIL DRAINS

Unplasticised polyvinyl chloride (UPVC) slotted drainage pipes and fittings: — shall be of approved manufacture jointed in accordance with the manufacturer's instructions.

Pitch-fibre perforated or slotted drainage pipes and fittings: shall comply with SANS Specification 921 and shall be jointed in accordance with the manufacturer's instructions.

Filter fabric: — shall be non-woven, spun bonded, needle punched and continuous polyester fabric, resistant to the effects of alkalis, acids, saline solution and sunlight.

STORMWATER AND SOIL DRAIN PIPES

Reinforced concrete non-pressured pipes: shall comply, with SANS Specification 677 and must be Type SC of the class specified with spigot and socket ends with rubber insertion ring or with ogee joints with approved rubber collars. Pipes must be marked with the manufacturer's name, trade name or registered trade mark, nominal bore, class and type, date of manufacture, the letter "R" denoting reinforced and the SANS mark. Joints shall be made in accordance with SANS Code of Practice 058.

Unplasticised polyvinyl chloride (UPVC) drain and sewer pipes and fittings: — shall comply with SANS Specification 791. Joins shall be made with fittings in accordance with SANS Code of Practice 058.

CONCRETE BEDS AND ENCASEMENT TO DRAIN PIPES: — Where pipes are required to be bedded on concrete, the bed of concrete shall be Class B, a minimum of 500mm wider than the diameter of the pipe, laid to correct falls and levels with recesses formed in same for pipe joints including all necessary formwork and any additional excavation. The barrel of the pipe shall then be bedded on a thin cement mortar (1:3) bed and laid to falls. After jointing, the recesses previously formed shall be filled in with concrete Class B and the haunching or surrounding completed.

Where pipes are fixed vertically they shall be encased in concrete Class B having a minimum thickness of 150mm around the pipe and carried up to ground level and shall include for any necessary formwork.

PIPE LAYING: — All drain and sewer pipes are to be laid to a straight line to even gradients and jointed in accordance with SANS Code of Practice 058 except in the case of polyethylene or unplasticised polyvinyl chloride drain and sewer piping which is to be in accordance with SANS Code of Practice 01 12.

Before laying, each pipe shall be examined to ensure that the bore is clean and free of any foreign matter and shall be tested for soundness by striking with a wooden mallet, and any cracked or damaged pipes shall be rejected. Ends of all pipes must be clean before

jointing. Immediately after jointing a tight fitting wad or scraper shall be drawn several times through the bore of the pipe to ensure that it is left clean and free from obstructions. Whenever work is suspended, the open ends of pipes and junctions must be temporarily plugged to prevent the entrance of rubbish during construction.

GULLEY TRAPS: — Gulley trap assemblies must be of the material specified with "P" or "S" trap, jointed to drain and with hopper head with vertical and side inlets, the head fitted with 190mm diameter cast iron gulley grating complying with SANS Specification 1115 laid loose in socket. The trap, hopper head and vertical pipe shall be set on and encased in concrete Class B having a minimum thickness of 150mm at any one part, carried up 75mm above ground level as kerb, dished down to grating and finished on all exposed surfaces in 1:3 cement plaster with angles rounded, including necessary excavation and formwork.

GREASE TRAPS: — Grease trap assemblies of vitrified clay must consist of outlet junction jointed to trap with side inlet. Access openings of trap and junction shall be fitted with vitrified clay stoppers laid loose in socket of trap and set in bitumen in socket of junction. The trap and junction and vertical pipe shall be set on and encased in concrete Class B having a minimum thickness of 150mm at any one part, carried up 75mm above ground level as kerb, dished down to grating and finished, on all exposed surfaces in 1:3 cement plaster with angles rounded, including necessary excavation and formwork.

RODDING EYES: — Where pipes are carried up in ramps for rodding eyes, the head of the pipe at ground level must be fitted with an **"A.B.C."** cast iron cover and frame, complying with SANS Specification 746, jointed to pipe, the frame rebated for and including cover with raised letters "CE" cast on same, secured to frame with gun-metal screws and with the whole encased in concrete Class B having a minimum thickness of 150mm at any one part, carried up 75mm above ground Level and finished on all exposed surfaces in 1:3 cement plaster with angles rounded, including necessary excavation and formwork,

INSPECTION EYE BLOCKS: — Where inspection eye fittings are provided in pipelines, the position of these inspection eyes must be registered and demarcated with concrete Class C. block size 300 x 300 x 50mm thick finished on all exposed surfaces with 1:3 cement plaster with angles rounded and with sunk letters "I.E." formed in top and set in ground, including necessary excavation and formwork.

SURFACE WATER CHANNELS: —Concrete open surface water channels shall be formed with concrete Class B with segmental channel formed in same to the size and shape specified and finished on exposed surfaces in 1:3 cement plaster, steel towelled to a smooth even surface with all angles rounded, cast in lengths not exceeding 2m and laid to falls, including necessary excavation and formwork.

GRATINGS FOR GULLEYS AND STORMWATER DRAINS AND CAST IRON SURFACE BOXES AND MANHOLE COVERS AND FRAMES: — Cast iron or Polymer gratings for gulleys and storm water drains shall comply with SANS Specification 1115 and SANS 1882:2003 respectively.

Cast iron surface boxes and manhole covers and frames shall comply with SANS Specification 558.

All cast iron gratings, cast iron surface boxes and cast iron manhole covers and frame must be coated with approved preservative solution before leaving the manufacturer's works.

The masses stated are the combined mass of the grating and frame or the combined mass of the cover and frame.

STORM WATER SUMPS, JUNCTION BOXES, MANHOLES, INSPECTION CHAMBERS, CABLE INSPECTION CHAMBERS AND VALVE CHAMBERS: — shall be of the internal size specified and are to be constructed of one brick sides, unless otherwise specified, built in 1:3 cement mortar on a 150mm thick concrete Class C bottom and finished on top with an 85mm thick pre-cast concrete Class C cover slab, reinforced as detailed and bedded in

cement mortar. The cover slab, except to junction boxes, is to have a rebated opening formed in same, suitable for and fitted with a cast iron orating and frame, or cover and frame, of the size and mass specified with the frame bedded in cement mortar. The bottom of the sump, manhole, etc. and the exposed surfaces of the cover slab are to be finished smooth in 1:3 cement plaster with angles rounded. The internal brick surfaces are to be faceḍ with smooth facing bricks and pointed with flush joints.

Inspection chambers and manholes with an invert not exceeding 1m shall have an internal dimension of 470mm x 700mm and those exceeding 1m shall have an internal dimension of 920mm X 920mm. Where the invert of the hole exceeds 1m, a 150mm thick reinforced concrete Class C corbel slab, reinforced as detailed, with opening size 470mm x 700mm formed in same and finished smooth off the formwork, is to be built into the brick sides at a height not exceeding 1, 5 inches above the concrete bottom with the reduced manhole shaft built off the top of the corbel slab. Cast iron step irons spaced at 300mm staggered centres vertically are to be built into one side of all manholes with an invert exceeding 1m.

Where measured in number, rates for all sumps, manholes, etc. are to include for excavating to the depths required, taking precautions against collapse of sides of excavations, staging, ramming, pumping and baling to keep excavations free from water or mud, filling around and ramming and depositing and levelling spoil on site or carted away as directed. Ends of pipes are to be built through the sides of the sumps, manholes, etc. and rates are to include for this.

SOIL DRAIN MANHOLES AND INSPECTION CHAMBERS: —are to be of the internal diameter and inverts specified and are to be constructed of pre-cast reinforced concrete manhole ring sections with walls a minimum of 50mm thick, pre-cast reinforced concrete cover slabs and spacer pieces complying with SANS Specification 677. The joints for the ring sections shall be of the ogee type. The bottom shall be of concrete Class C-cast in-situ.

The placing of the concrete bottom and benching shall be carried out in three stages with the initial stage being the laying of the concrete bottom projecting 100mm beyond the external diameter of the manhole on which is laid the inspection eye pipe, branches, etc. The second stage comprises the laying of concrete within the manhole to the height of the pipes and around the perimeter of the bottom to a height of not less than 25mm above the collar of the pipe at the highest end. This annular base is to be shuttered to provide a horizontal setting for the first ring section which is to be firmly bedded in the wet concrete. The third stage comprises the laying of the benching within the initial ring section and finished in 1:3 cement plaster with all angles rounded. Thereafter, the ring sections of the required standard height are joined together to form the required depth, with all joints primed with “Bituprime” and sealed with “Bitujoint Putty”. A 125mm thick pre-cast reinforced concrete cover slab, rebated on underside to suit ring sections and with opening size 600mm x 600mm formed in same is to be bedded on top of the ring section. The shaft above the cover slab is to be constructed of either pre-cast reinforced concrete spacer units to suit the type of cast iron cover and frame specified, or one brick kerb walls faced internally with smooth facing bricks jointed with flush joints, and finished on top with an 85mm thick pre-cast concrete Class C cover stab, reinforced as detailed and bedded in cement mortar with the exposed surfaces finished smooth in 1:3 cement plaster with all angles rounded. The cover slab is to have a rebated opening formed in same suitable for and fitted with cast iron cover and frame of the size and mass specified, with the frame bedded in cement mortar.

MANHOLE COVERS AND FRAMES:- Cast iron, Concrete or Cultured Polymer covers and frames to be suitable for the area of usage.

SOAK PITS: — shall be of the lengths and widths specified and shall be a minimum of 900mm deep below the invert of the inlet pipe. A perforated pitch-fibre drainpipe, jointed to the inlet pipe and with other end capped, is to be laid level in a 19mm stone packing of a minimum thickness of 15mm below and at sites of pipe and a minimum thickness of 150mm below the top of the pipe. The remainder of the soak pit is to be filled with stone graded

from 50mm to 75mm, to a level of 50mm above the top of the pipe. The stone is to be covered with corrugated asbestos cement sheets extending 150mm beyond the walls of the soak pit all round. The trench shall be backfilled above the sheeting to a minimum depth of 300mm lightly rammed with the final 100mm of backfilling being approved topsoil from the excavations.

SEPTIC TANKS: —shall be of the internal sizes specified and are to be constructed of one brick sides built in 1:3 cement mortar on 150mm thick concrete Class C bottom laid to falls. A half brick baffle wall finished 75mm below underside of concrete cover slab and with opening size 150 x 150mm high formed in wall is to be built in 1:3 cement mortar on the concrete bottom. A 115mm thick reinforced concrete Class C cover slab, reinforced as detailed, is to be cast in-situ on removable formwork and is to have two openings formed in same, each suitable either for and fitted with 600 x 450mm x 38 kg cast iron single seal manhole cover and frame, or for the shaft of the inspection chamber built off the cover slab in one, brick walls in 1:3 cement mortar with smooth face bricks internally, finished on top with 85mm thick pre-cast concrete Class C cover slab, reinforced as detailed and rebated for and fitted with 600 X 450mm X 38-kg cast iron single seal manhole cover and frame. The bottom and sides of the septic tank are to be finished in 1:3 cement plaster, 19mm thick, with an approved waterproofing compound added, with all internal angles coved to 50mm radius. Inlet and outlet chambers attached at either end of the septic tank shall be size 600 x 450mm internally, of the depth required and each shall be constructed of one brick walls built in 1:3 cement mortar on a concrete Class C bottom 150mm thick, or where extended above the top of the septic tank cover, built off the cover and finished on top with 85mm thick pre-cast concrete Class C cover slab, reinforced as detailed and bedded in cement mortar with the exposed surfaces finished smooth in 1:3 cement plaster with angles rounded. The cover slab is to have a rebated opening formed in same suitable for and fitted with a 600 x 450mm x 38 kg cast iron single seal manhole cover and frame. Chambers shall be provided with inspection eye pipes or bends, straight or curved channel sections, benched up to sides of chambers in concrete Class C, finished in 1:3 cement plaster with all angles rounded.

The inlet and outlet of the septic tank shall be formed of cast iron square junction piece with tail-pipe extending 300mm below water level in tank, built in through end walls and jointed to channels in inlet and outlet chambers.

TESTING OF DRAINS, MANHOLES AND INSPECTION CHAMBERS: — All drains, manholes and inspection chambers with the exception of subsoil drains shall be constructed so as to be watertight. No trenches shall be backfilled or pipes encased in concrete until the drains have been tested and approved. Any drains covered by the Contractor prior to testing shall be exposed at the Contractor's expense.

The Contractor shall give at least 24 hours notice of any particular length between manholes ready for testing. The drains shall not be tested until a period of 24 hours, or such other period as may be required, has been allowed for the pipe joints to set. The Contractor shall provide all necessary testing apparatus, expanding plugs, stoppers, water and any other materials and all labour that may be required for carrying out the tests.

The whole of the drainage system shall be tested using one or more of the following tests:-

(a) **Visual test—** Each length of pipe shall be inspected for invert level grade, direction and line. Internal inspection of the bore of the pipes shall be made using mirrors and a powerful source of light. The drains must be free of invert lips and the bases of the pipes must be straight.

(b) **Air test** — All openings in the drain shall be plugged and sealed and all associated traps filled with water and air pumped into the drains until a manometric pressure of 40mm is indicated, after which, without further pumping, the pressure shall not drop below 25mm for a period of at least 30 seconds.
After the entire drainage system has been completed, all plumbing fittings installed and permanently connected up, and traps filled with water, a final air test shall be applied to the whole system.

(c) **Water test**— All openings-in the drain, except the highest one, shall be plugged and sealed and the drain filled with water so that every part of the system is tested under a head of water of not less than 1.5m and not more than 3.5m. After allowing period of 10 minutes for initial absorption, the amount of water it shall be necessary to add to maintain the water level over the next 15 minutes shall not exceed a rate of 25 litres for 100mm diameter pipe and 3,75 litres for 150mm diameter pipe for 100m of drain and an equivalent rate for larger drains. In carrying out the water test, the head of water shall be obtained by providing temporary pipes, fittings, etc. wherever necessary or by such other method as may be approved.

In cases where the maximum head of water, owing to the gradient of the drains, would be exceeded in any section, inspection eyes at suitable intervals may be provided and the drain plugged, in order not to subject the lower portion of the drain to a greater head of water than that required. Drains must be free of air before testing.

(d) **Manhole and Inspection Chamber test** — The inlet and outlet pipe hose shall be plugged and sealed and the inspection chamber filled with water. After allowing the water to stabilise due to absorption, the water level should not fall more than 5mm in *2* hours.

DEFECTS TO BE MADE GOOD: — Should the drain system fail to withstand the above tests, all defects shall be made good and the tests repeated at the Contractor's expense until the whole system is sound and passed to the satisfaction of the Department. In making good, all defective parts shall be cut out and replaced with new. No patching of pipes, joints or connections will be permitted.

SHEET METALWORK: — generally is to be lapped 75mm at ends and 150mm at angles, unless otherwise specified. Rates for sheet metalwork shall include for all labour, cutting and waste, laps, seams, welts, angles, clips, tacks, soldered dots, riveting, soldering, brazing, burning, nailing, dressing and wedging as required. All measurements are net with no allowance being made for laps, seams, welts, angles, clips and tacks or waste in cutting. Where stepped flashings are described as to flat slope, the pitch of the roof to which they apply does not exceed 40 degrees

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(a) **Galvanized sheet iron**: — shall be of an approved brand of the thickness specified after galvanising and having a galvanized coating of "Iscor Coating Designation Z450". Corroded or otherwise defective sheets shall not be used. All nailing or screwing shall be done with galvanized nails or screws.

(b) **Sheet aluminium**: — shall be of the thickness and quality specified. All nailing shall be done with aluminium alloy nails and all screwing done with stainless steel screws.

(c) **Sheet copper**: — shall be cold rolled sheet of the thickness and temper specified. Sheet copper for covering flat roofs and for valley and gutter linings, flashings, soakers, etc. shall be of dead-soft temper and for eaves gutters, rainwater pipes and other unsupported or semi self-supported work shall be of half-hard temper. All nailing shall be done with copper or copper alloy nails and all screwing done with brass screws.

(d) **Sheet lead**: — shall be best milled sheet lead of the full mass specified and of equal thickness throughout and must comply with SANS Specification 1178.

LININGS TO VALLEYS: — shall be of the material specified, lapped 200mm at ends and dressed up on to purlins or battens at sides of valleys with edges bent back to form open beads.

LININGS TO SECRET GUTTERS: — at back of chimney stacks and wall abutments and at raking intersections of walls and roofs shall be of the material specified, turned 100mm up vertical surfaces and dressed 250mm up roof slope and on to purlin or batten at edge.

SOAKERS: — to slate covered roofs shall be of galvanized sheet iron or sheet copper of 0.6mm thickness, 450mm wide to closed valleys and 250mm wide to raking intersections of roofs with vertical wall and chimney stack abutments and turned 75mm up vertical surfaces. Soakers shall be 75mm longer than the gauge of the slate roofing.

UNDER-FLASHINGS: — to all iron roofs and where specified to slate or tiled roofs shall be 0.6mm thickness galvanized sheet iron. Flashings to asbestos cement roofs shall be asbestos cement preformed units fitted in accordance with the manufacturer's instructions. Where specified, copper flashings shall be formed from sheet of 0.6mm thickness and aluminium flashings shall be formed from 1200-H4 quality sheet of 0.6mm thickness. Lead flashings, where specified, shall be formed from sheet having a mass of 24 kg/in 2.

COVER FLASHINGS: — shall be either galvanized sheet iron, copper or aluminium, as specified, of 0.6mm thickness fitted over under-flashing, stepped where required on rake and with top edge bent and wedged 25mm deep into joint of brickwork or groove formed in concrete face and flush pointed in 1:3 cement mortar.

FLASHINGS AROUND PIPES THROUGH ROOF COVERINGS

(a) Pipes through preformed sheet steel roofing shall be flashed around with 0.6mm galvanized sheet iron apron pop-riveted to top of roofing wit edges cut and dressed to profile of roofing, soldered all round and with conical sheet iron 'u' stand, riveted and soldered at joint and at base to apron. The top of the conical upstand is to be fixed around the pipe with 25mm x 3mm galvanized mild steel strap wrapped around the pipe and fixed with a galvanized steel gutter bolt.

(b) Pipes through fibre cement roofing shall be flashed around with 24 kg/in 2 lead a on dressed into corrugations, bedded in mastic and bolted to roof sheeting with galvanized steel gutter bolts and with conical lead upstand, wiped on at joint with apron, and secured around pipe with copper wire.

(c) Pipes through slate or tile roofing shall be flashed around with 24 kg/in 2 lead apron dressed to profile of slates or tiles with top edge of lead apron dressed over back edge of slate or tile under overlap of slates or tiles. A conical lead upstand, wiped on at joint with apron, is to be secured around the pipe with copper wire.

(d) Pipes through pre-printed or embossed sheet steel or aluminium roofing shall be flashed around with flexible glass-fibre reinforced waterproofing dressed to profile of roofing, pop-riveted around edges to roofing and dressed up and around pipe. The waterproof is to be finished in a colour to match that of the roofing material.

RAINWATER PIPES

GENERALLY:

Full bore outlets for flat roofs are not allowed. Where flat roofs are specified, it is preferred to have a drain along the edges into a common outlet. Where roof cover is of 'Chromodek' sheets, the preferred guttering is of the same material in the same colour in continuous lengths.

(a) **Unplasticised polyvinyl chloride (UPVC) rainwater pipes and accessories** shall comply with SANS Specification 967 and must be fixed clear of the finished wall face on stock pattern brackets in accordance with the manufacturer's instructions.

(b) **Galvanized mild steel rainwater pipes**, shall be medium quality screwed and socketed normalised welded mild steel pipes, galvanized inside and outside, and shall comply with SANS Specification 62.

Fittings for galvanized mild steel pipes shall comply with SANS Specification 509. The screwed joints must be made with lead paint and hemp or approved thread sealing tape. The pipes must be fixed clear of the finished wall face with galvanized cast iron hinged

holderbats built into walls at not exceeding 2m centres in 1:3 cement mortar.

EAVES GUTTERS

a) **Galvanized sheet iron gutters, rainwater heads, etc.** shall be formed from 0.6mm sheet and must have beaded edges with all laps riveted and soldered. Corners must be reinforced with 0.6mm X 50mm wide galvanized sheet iron strips and must be soldered across the inside of the angles.

Gutters must be laid to even falls on approved galvanized mild steel gutter brackets screwed to roof timbers at approximately 1m centres. Half round pattern gutters shall be bolted to each bracket with 6mm galvanized gutter bolt fitted close to the beaded edge. Rectangular pattern gutters shall be fixed at each bracket with galvanized mild steel long-screw with 1mm thick galvanized sheet iron spacer tube.

(b) **Fibre cement gutters and accessories** shall be of approved manufacture, not less than 6mm thick, with spigot and socket joints made in an approved mastic compound in accordance with the manufacturer's instructions. Gutters must be laid to even falls on approved aluminium alloy or stock asbestos cement brackets screwed to roof timbers at the manufacturer's recommended spacings.

(c) **Unplasticised polyvinyl chloride (UPVC) gutters and accessories** shall comply with SANS Specification 11 and must be laid to falls and fixed on brackets in accordance with the manufacturer's instructions.

SANITARY PLUMBING AND FITTINGS, WASTE, VENTILATION AND ANTI-SIPHON PIPES

(a) **Unplasticised polyvinyl chloride (UPVC) pipes and fittings** shall be of approved manufacture marked with the manufacturer's name and trade name, the nominal bore and the South African Bureau of Standards mark and shall comply with SANS Specification 967. Joints shall be made with injection moulded fittings in accordance with the manufacture's instructions and SANS Code of Practice 0112. The pipes must be fixed clear of the finished wall face with aluminium alloy holderbats fitted with plastic cushion strips with the holderbats fixed to plugs in wall.

(b) **Polypropylene pipes and fittings** shall be of approved manufacture and shall have a mechanical form of jointing. Pipes and fittings are to be fixed and jointed in accordance with the manufacturer's instructions.

(c) **Multilayed pipes** shall be of approved manufacture and shall have a mechanical form of jointing. Pipes and fittings are to be fixed and jointed in accordance with the manufacturer's instructions.

SANITARY FITTINGS: — All sanitary ware must comply with SANS 497 Specifications and be fitted with Ball-O-Cock valves in supply lines.

Wash hand basins shall be of white glazed fireclay or vitreous china of the type and size specified. Basins shall have an integral overflow to non patient treatment facilities and be fitted with 32mm chromium plated waste union with flange and grating, rubber plug on chromium plated brass chain and, where required, tap hole stopper cemented in.

WC pans shall be of white glazed fireclay or vitreous china of the type specified with 'S" or "P" trap with straight or side outlet and shall be fitted with single or double flap plastic seat as required, secured to pan with concealed brass holding down bolts. Pans shall be bedded on the concrete floors in 1:3 cement mortars. Pans in seclusion rooms and other public areas to be 'Gypsy' vandal proof – or other approved.

Glazed ceramic urinals of the bowl or stall type shall be of white glazed fireclay or vitreous china. Bowl urinals shall be fitted with 40mm chromium plated waste union, with flange and

domical grating and with spreader with flush pipe connector. Stall urinals shall be fitted with 75mm chromium plated waste union with flange and hinged domed grating and with spreader with flush pipe connector.

Flushing cisterns shall be as specified, either of white porcelain enamelled cast iron, white glazed fireclay, vitreous china or black plastic complying with SANS Specification 821, each with body and cover. Cisterns shall be a maximum of 11 litre capacity and the flushing apparatus shall be of brass, copper or other corrosion resistant metal, PVC or other approved plastic or of an approved ceramic material. All cistern lids must be able to be **screwed** down. Connections for flush pipe, inlet and overflow pipe must be provided in the body. Cisterns shall be fitted with 15mm brass ball valve with copper, PVC or polystyrene ball and with either chromium plated operating lever handle or galvanized steel pull chain and handle. A galvanized, white enamelled or chromium plated steel or copper flush pipe, of the required length, as specified, is to be jointed to the flush pipe connection on the body of the cistern and in the case of WC pans is to be fixed to the inlet of the pan with an approved patent adaptor. From the overflow connection on each cistern a 22mm copper overflow pipe, bent as required, shall be taken through wall to discharge externally, with ends splay cut and projecting 50mm beyond wall face, or where this is not possible, bent to discharge into WC pan.

Baths shall be enamelled cast iron baths of the type and size specified, holed for and fitted with chromium plated brass overflow union with grating, 40mm chromium plated brass waste union with flange and grating, rubber plug on chromium plated brass chain and fitted with adjustable cast iron feet. The fall along bottom of baths from head ends to outlets must be adequate for complete emptying.

Stainless steel sinks and drainers shall be of the types and sizes specified with exposed surfaces buffed to a satin finish and sound deadened on underside by application of an approved sound deadening coating. Splashbacks with tiling keys shall be provided at back and at ends against walls or as specified. Sink bowls are to be pressed out of single sheets with complete drainage to outlets and each bowl is to be fitted with integral built-in overflow with chromium plated brass grating and 40mm recessed waste outlets with chromium plated brass waste union with grating, rubber plug and chromium plated brass chain. Sink bowls, unless otherwise specified, are to be 450 x 355 x 140mm deep. Drainers are to be pressed out of single sheets and are to have pressed flutes to give complete drainage.

(a) For domestic use — Sinks shall comply with SANS Specification 242 and shall be manufactured from A.I.S.I. Type 430 stainless steel 0.8mm thick for units not exceeding 2,4m long and from stainless steel 1.2mm thick for units exceeding 2,4m Long. -

(b) For hospital use and laboratories — Sinks shall be manufactured from A.I.S.1. Type 304 stainless steel 0.9mm thick for units not exceeding 2.4m long and from stainless steel 1.2mm thick for units exceeding 2.4m long.

Stainless steel wash hand basins and wash troughs shall be of the types and sizes specified complying with SANS Specification 906, with exposed surfaces buffed to a satin finish and sound deadened on underside by application of an approved sound deadening coating. Each basin or wash trough in non patient treatment area's are to be fitted with integral built-in overflow with chromium plated brass grating and 40mm recessed waste outlet with chromium plated brass waste union with grating, rubber plug and chromium plated brass chain.

Stainless steel urinals shall be of the types and sizes specified complying with SANS Specification 924 and shall be manufactured from A.I.S.I. Type 304 stainless steel, 1.2mm thick, buffed to a satin finish and sound deadened at back by application of an approved sound deadening coating. The back and sides of urinals are to be made rigid by means of integral pressed ribs or by bowing. Edges at sides and top are to have plaster key. Tread plates are to be ribbed and the front edges are to be stiffened and bent to form key for floor finish. The trough shall be a minimum of 125mm wide and half round in section with all corners radiused and shall fall to ensure complete drainage to 75mm recessed outlet with

chromium plated domed hinged grating and frame.

RATES FOR SANITARY WARE: — shall include for the supply and fixing of the units as specified and for cleaning, washing and leaving in a satisfactory condition on completion.

BELOW GROUND WATER RETICULATION

Unplasticised polyvinyl chloride (UPVC) piping and fittings shall be of approved manufacture complying with SANS Specification 966. Pipes must be of the class specified and must be marked with the manufacturer's name, trade name or registered trademark, nominal diameter, class reference and the SANS mark. Pipes shall be laid and jointed in accordance with the manufacturer's instructions.

High density polyethylene (HDPE) piping shall be of approved manufacture complying with SANS Specification 533 and shall be of the class specified, laid and jointed in accordance with the manufacturer's instructions. Piping must be jointed with compression fittings with compression rings and coupling nuts.

High Density Polyethylene / Polypropylene / Multilayed piping shall be of approved manufacture, complying with SANS Specification 15875-1-2004 & 2/2003 & 1315, laid and jointed in accordance with the manufacturer's instructions.

Copper piping shall be of approved manufacture complying with SANS Specification 460 and shall be of Class 2. Pipes must be jointed with brass compression fittings with compression rings and coupling nuts complying with SANS Specification 1067 Part I Type 'A'. Copper piping must be bent, where required, with an approved bending machine.

ABOVE GROUND WATER SUPPLIES

Colour Coding Cold Water Supply the exposed piping for this non potable (recycled) water shall be colour banded Brilliant Green (B49) / Yellow Band(H10).
The other exposed piping for potable (drinkable) water shall be colour banded Brilliant Green (B49) / Blue Band(F29)

Galvanized mild steel piping for water supplies shall be medium quality screwed and socketed normalised welded mild steel pipe, galvanized inside and outside, and shall comply with SANS Specification 62.

Fittings to galvanized mild steel piping shall be steel pipe fittings complying with SANS Specification 62 or malleable cast iron fittings complying with SANS Specification 509.

Copper piping shall be of approved manufacture, complying with SANS Specification 460 and shall be of Class 2 – fixed and jointed in accordance with the manufacturer's instructions. Class 2 copper piping must be jointed with brass compression fittings with compression rings and coupling nuts complying with SANS Specification 1067 part I Type 'A'.

Polypropylene / Multilayed Piping shall be of approved manufacture, complying with SANS Specification 1315, laid and jointed in accordance with the manufacturer's instructions. This applies to hot and cold water supply within ceiling spaces also.

Stainless steel piping shall be of approved manufacture, complying with SANS Specification 4127 and shall be A.I.S.I. Type 304 L. Fittings to stainless steel piping not exceeding 50mm nominal bore shall be brass compression fittings with compression rings and coupling nuts.

Piping exceeding 50mm nominal bore shall be welded piping with 1.5mm wall thickness, unless otherwise stated, and of A.I.S.I. Type 316 stainless steel. Joints are to comprise approved A.I.S.I. Type 316 stainless steel pressed collars welded to ends of pipes and fittings with loose galvanized mild steel slip-on flanges complete with galvanized mild steel bolts, nuts and washers, and neoprene gaskets. Fittings must be A.I.S.I. Type 316

stainless steel butt weld fittings.

Phosphoric acid based fluxes must be used for all welded joints which are to be argon arc TIG welded using Type 316 filler rods, with the welds treated with suitable pickling compound.

WATER TAPS AND VALVES: — Water taps, stopcocks, ball-o-cocks and wheel valves shall be of approved manufacture complying with SANS Specification 226.

Ball valves with brass valve and copper or plastic ball float shall be of approved manufacture complying with SANS Specification 1056. Plastic floats when supplied, must comply with SANS Specification 1006.

Full Bore Teflon Seated Ball Valve shall be of approved manufacture complying with SANS Specification 664. Valves shall be clockwise closing with non-rising, cap-fitted spindles and flanked connections and of the class specified.

Pressure reducing valves shall be of approved manufacture complying with SANS Specification 198.

FIXING OF WATER PIPES: — Galvanized mild steel water piping shall be fixed, unless otherwise described, to walls or ceilings with galvanized malleable iron holderbats (school board pattern), built into walls in 1:3 cement mortar. Pipes shall be fixed to timber work with galvanized mild steel pipe clips screwed on.

Copper and stainless steel water piping shall be fixed, unless otherwise described, to walls or ceilings with brass holderbats (school board pattern) built into walls in 1:3 cement mortar. Pipes shall be fixed to timber work with brass or copper pipe clips screwed on.

Polypropylene / Multilayed Piping - shall be fixed to walls according to manufacturers recommendations.

CONCRETE THRUST AND ANCHOR BLOCKS: — shall be of the sizes required and provided where directed to anchor the water pipelines against the thrust due to hydrostatic pressure. Concrete blocks shall be cast against the undisturbed face of the excavation. Backfilling behind the thrust face of the block will not be permitted.

TESTING OF WATER MAINS: — The whole of the water reticulation shall be subjected to a hydraulic test pressure 1.5 times the maximum working pressure of the pipeline. Testing of pipelines may only commence after the installation of all anchor blocks, valves and fittings have been completed. Testing shall be carried out between installed sluice valves whenever possible. Where this is not possible the ends of the pipes shall be sealed with end caps properly held in place with temporary props.

The tests shall be carried out on lengths not exceeding 300 metres.

The pipeline shall be filled from the lowest end in order to expel the air at the upper end through special taps or through service connections, stand pipes, etc. When full the line shall be allowed to stand for 24 hours and any further accumulated air shall be expelled. The full test pressure shall then be applied and maintained for one hour, during which time the line will be examined for any leaks, movement at anchors and other defects.

Any defective work is to be taken out and replaced at the Contractor's expense and the whole retested until found satisfactory.

The Contractor shall provide all necessary testing apparatus, temporary end caps, plugs, stoppers, special taps and any other materials that may be required, and all labour for carrying out the tests.

EXCAVATIONS FOR PIPE TRENCHES: — Excavations for pipe trenches, gulley traps, manholes, inspection chambers, valve, chamber, soakpits and septic tanks shall be to the

depth and gradients shown on the drawings using sight rails and boning rods and shall include for taking precautions against collapse of sides of excavations, staging, pumping and baling to keep the excavations free from water or mud and for filling in and ramming.

The bottoms of pipe trenches are to be excavated to even falls. The barrel of the pipe, except where it is laid on a sand or concrete bed, must rest on solid ground and hand-holds of sufficient size must be cut under pipe joints to enable the jointing and filleting to be properly performed. Any excavations taken out deeper than required shall be made up to the correct grade with well rammed earth. In intermediate or hard rock excavation and where a bedding is not specified, the trench bottom must be excavated 100mm deeper than required for the grade and be backfilled with well rammed earth.

The Contractor is to notify the Department when the trenches are ready for inspection and approval. Any work put in hand before approval has been given shall, if so required, be replaced with new at the Contractor's expense.

Notwithstanding such approval of the trench bottoms, any excavations which become waterlogged or otherwise spoilt after approval, shall be cleaned out and reformed at the Contractor's expense and to the satisfaction of the Department before any piping or sand or concrete beds are laid.

Depths of excavations as approved shall be checked and recorded by a Departmental Official and the Contractor before excavations are filled in.

For the purpose of any measurement, whatever size may have been excavated, excavations are taken as follows: — Trenches not exceeding 0.75mm deep shall be taken 0.5m wider than the internal diameter of the pipe. This width shall be increased by 75mm for each successive depth of 0,75m to a maximum of 1m wider than the internal diameter of the pipe.

BACKFILLING: — No trench shall be backfilled until the Department is satisfied that the works therein have been satisfactorily completed, tested and are ready for backfilling.

The backfilling around and 300mm above the pipe is to be of approved selected material, imported if necessary, free from rock or stone, carefully packed, watered and lightly rammed equally on either side of the pipe and then filled in above this level with suitable material from the excavations, watered and compacted in layers not exceeding 300mm thick with the top 300mm consolidated to dry density of not less than 95% MOD. A.A.S.H.O. density. Topsoil from the excavation is to be set aside and used in the final layer of backfilling.
Any disturbance of or damage to the pipes during backfilling must be made good by the contractor at his own expense.

All spoil from the excavations for trenches, etc. shall be deposited and levelled on site or carted away as directed. Any subsidence or depressions below the level of the adjacent ground shall be filled in, as and when necessary, until the end of the maintenance period.

SIZES OF PIPES: The diameters stated for galvanized mild steel piping, cast iron piping, vitrified clay piping and asbestos cement pressure piping (C.I.D.) are the nominal internal diameters. The diameters stated for all other pipes are nominal external diameters.

In the case of piping and fitting which are manufactured in imperial diameters, the size nearest the metric equivalent must be used.

RATES FOR PIPES: — Rates for all pipes, gutters, channels, etc. are to include for couplings in running lengths, joints, short lengths and cutting and fixing as required. Rates for mild -steel pipes shall include for all plain sockets and nipples. Where fittings have reduced ends or branches the fittings are described as "reduced" and the largest end or branch has been stated. The Contractor may use equal fittings with reducers or bushings if he so desires, but no claim for extras in this connection will be entertained.

Rates for pipes fixed to walls, soffits of slabs, roof timbers, etc. are to include for all

brackets, holderbats, pipe clips and approved extended hangers where pipes are required to be laid to falls and for plugging and screwing or for cutting and pinning or building in tails of holderbats.

Rates for piping are to include for cleaning down at completion, and in addition, the rate for stainless steel pining is to include for polishing exposed piping, all to the approval of the Department.

RATES FOR CHASES, HOLES ETC.: — are to include for making good to approval. The term “hole” is to include for sleeves where required through concrete work.

FIRE EXTINGUISHERS: — Where specified, carbon dioxide gas type fire extinguishers shall be 2.26kg type, complying with SANS Specification 889 and fixed in position on wall brackets screwed to and including 20mm thick chamfered and oiled wrot hardwood backboard, size 450mm x 100mm screwed to plugs in wall.

Where specified, dry powder type fire extinguishers shall be of 10 litre capacity, complying with SANS Specification 810 and fixed as before described on backboard size 1000mm x 200mm.

FIRE HOSE REELS: — shall be non-swinging rotary fire hose reels, complying with SANS Specification 543, with solid side discs and 25mm waterway at bracket incorporating rotary pressure joint to hose connection at hub and fitted with 25mm screwed malleable iron ‘Sanders type A’ valve with “S” grade diaphragm, connection for supply pipe with the handwheel clearly marked in red with arrows and the words “OPEN”, “OOP”.

The reel is to be secured to the wall with and including three steel anchor bolts and fitted with 30m length of 20mm internal diameter best quality reinforced red rubber non-kinkable hose with one end fixed to wheel hub connection and the other end fitted with 20mm chromium plated gunmetal adjustable “Centorium” type nozzle with hose threaded through and including chromium plated hose guide, designed to permit the hose to run out in any direction and the nozzle supported on and including chromium plated bracket fixed to wall.

For ease of removal, a union shall be installed between the valve and the reel.

FIRE HYDRANTS: — shall be of the wheel valve pattern with instantaneous coupling outlets, size 63.5mm or 70mm as stated on the drawings. Hydrants fixed in a horizontal position shall have oblique angle outlets and those fixed in a vertical or inclined position shall have right angle outlets. The materials used in the manufacture of the hydrants shall be as laid down for the manufacture of couplings, branch pipes, etc. in SANS Specification 1128, and the various requirements of instantaneous couplings and dimensions for 70mm outlets shall comply with the requirements for Morris instantaneous pattern couplings.
The valve spindle shall have a minimum diameter of 22mm with swivelling clack at one end fitted with first quality dexine or other approved washer, bedded on to a raised seat not less than 6mm wide, and the other end shall be machined to form a square shank of 15mm minimum thickness and a length corresponding with the thickness of the boss of the handwheel, the portion protruding from the boss shall be threaded and fitted with a washer and nut to hold the handwheel firmly in place. Valve inlet shall be male screwed 80mm Whitworth pipe thread, and outlet shall be fitted with approved India-rubber coupling gasket. The internal diameter of the valve body shall be not less than 95mm in the case of 63.5mm outlets or 100mm in the case of 70mm outlets.

The valve hand wheel shall have an overall diameter of 165mm and the rim shall be of oval cross-section and shall have the words “OPEN” and “OOP” together with direction arrows embossed on the face.

All hexagonal faces shall be machined and all exposed surfaces of the valve and the wheel periphery shall be buffed and polished. Parts of the wheel not polished shall be painted two coats bright red high gloss paint.

The completed hydrant valve shall be guaranteed hydraulically tested by the manufacture to a pressure of 35 bar and shall be badged or stamped accordingly with the manufacturer’s

name or symbol and the words “TESTED 35 bar”.

16. GLAZING

MATERIALS: — Glass shall conform to the requirements of the relevant current British Standards Specification for the respective materials.

Clear glass shall be float quality glass.

Silvered glass mirror to comply with SANS Specification 1236 Class A.

Toughened safety glass 15 to be “Armourplated” float quality safety glass of the thickness specified and as manufactured by Armourplate Safety Glass (Pty) Ltd. or other approved, and glazed to sashes, etc. in strict accordance with the manufacturer’s instructions.

All toughened safety glass is to have the manufacturer’s name or motif sand-blasted in one corner of each pane

Laminated safety glass is to be float quality normal strength glass, unless otherwise stated, and of the type specified and as manufactured by Shatterprufe Safety Glass Co. (Pty) Ltd., or other approved, and glazed to sashes, etc. in strict accordance with the manufacturer’s instructions.

All laminated safety Glass is to have the manufacturer’s name or motif sand-blasted in one corner of each pane.

All glass is to be free from imperfections and is to be left in a thoroughly clean condition on completion.

No glazing is permitted in Patient Treatment area’s below 1 (one) meter.

GLAZING: — The glazing and fixing of glass in buildings shall be in accordance with SANS Code of practice 0317.

Glass panes shall have adequate glazing clearance between edges of glass and the rebates.

Putty for glazing shall comply with SANS Specification 680 type 1 for glazing in wood and type 2 for glazing in steel. Putty for glazing in natural finished wood shall be tinted to match the colour of the wood. Putty to be mixed with a hardener to allow for painting within +/- 3 days. Putty for glazing in aluminium windows shall be tinted to match the aluminium or anodised aluminium where required.
All rebates, other than those in natural finished hardwoods, are to be primed before glazing. Glass fixed with glazing beads shall be well bedded in back putty in the rebates.

Putty shall be carefully trimmed and cleaned off with front putty worked to within 3mm of the sight lines.

RATES: — Rates for glass generally shall include for preparing the rebates, etc. all putty, sprigs, clips, etc. as required and all cutting.

Rates for toughened and laminated glass shall include in addition for all necessary spacing and setting blocks in accordance with the manufacturer’s requirements.

17. PAINTING

MATERIALS: — Proprietary materials where specified are to be of the brand specified or other approved by the Department.

All primers, emulsion paints, enamels, stains, varnishes, etc. are to comply with the relevant SANS Specification.

Paints, etc. shall be suitable for application on the surfaces to which they are being applied and those used externally shall be of exterior quality or suitable for exterior use.

For any particular work the priming coat and subsequent coats of paint are to be executed with paints from the same manufacturer and in accordance with that manufacturer's instructions.

The materials are to be brought to the site in unopened containers and no adulteration will be permitted, except thinners of a quantity and quality directed by the manufacturer.

The Department shall at all times be permitted to take samples for testing purposes from open containers of any brand of paint being used on the work.

All materials, if and when required by the Department, will be subject to tests by the South African Bureau of Standards, and the cost of such tests, should the material under test not meet the requirements of this specification, shall be borne by the Contractor. Fillers and stoppings are to be suitable for use with the material being filled or stopped and to the approval of the Department.

PREPARATORY WORK: — All new and existing surfaces are to be thoroughly dry and are to be cleaned of all dust, dirt, grease, oil, rust, scale, efflorescence, fungus, loose or flaking material, etc. rubbed down, stopped, filled, knotted and sanded smooth as required in accordance with the paint manufacturer's recommendations and to the approval of the Department prior to the application of paint, etc.

Ceilings are to have nail heads, including those to cornices and cover strips, primed and stopped up as necessary and rubbed down smooth.

Asbestos cement shall be primed with an approved alkali resistant primer before the application of subsequent coats which are not, in themselves, alkali resistant.

Iron, steel and other ferrous metals shall be cleaned in accordance with SANS Code of Practice 064 to remove rust, scale, grease, oil, etc. and the surface brought to a bright metallic condition.

Galvanized iron and zinc shall be cleaned in accordance with SANS Code of Practice 062 to remove the manufacturer's temporary protective coating, white rust, etc.

Other non-ferrous metals shall be thoroughly cleaned to remove all milling oils, temporary protective coatings, etc. and the surface abraded with fine water-paper and white spirit.

Woodwork to be painted shall have all knots and resinous areas treated with an approved knotting, the surface shall then be primed and all holes, etc. stopped and rubbed down smooth,

Woodwork to be oiled, stained, varnished, etc. shall be free of all stains, pencil marks and other surface discolorations and all holes, etc. stopped with tinted stopping and rubbed down smooth.

In preparing existing glazed sashes and sash doors, all loose putty is to be removed, the rebates primed and glass re-sprigged and re-puttied as necessary before the painting is commenced.

Previously distempered or lime washed surfaces to receive any other type of paint, are to have the existing distemper or lime wash completely removed by scraping or wire brushing and the surf aces treated with an approved bonding liquid.

Where existing paint film are in good condition any flaking or bared patches are to be properly feathered into the surrounding paint and spot primed as necessary.

Where existing paint films are in poor condition and require to be removed completely, they are to be removed by means of wire brushing, paint remover, burning off, or other approved method. Paint removers shall be free of wax and caustic substances and shall preferably be of water rinseable type. When burning off paint from wood, care must be taken to avoid charring the wood.

The final state of preparatory work to existing decorated surfaces shall in all cases produce in the finished decorated surfaces a condition similar to new work.

The Contractor will be held responsible for the proper and adequate preparation of the surfaces and any work which fails to meet the manufacturer's recommendations must be made good at the Contractor's expense to the satisfaction of the Department.

APPLICATION OF PAINTS, ETC.: — Painting may be carried out by brush, roller or spray as recommended by the manufacturer and to the approval of the Department. All paints, etc. are to be applied in strict accordance with the manufacturer's instructions. Each coat of paint is to be adequately and permanently keyed onto the previous coat or surface and shall be evenly distributed and continuous and shall dry to a smooth film, free from sags, runs or other imperfections. Each coat of paint is to be of a colour distinctive from previous or succeeding coats.

All painting must be done in accordance with a colour scheme which will be provided by the Department, and rates for painting etc. are to include for all cutting in of contrasting colours and masking as required. No distinction has been made where more than one colour of the same material is required on the walls or ceiling of the same room.

Samples of colours for the final coats are to be prepared in all cases to the approval of the Department and all work must be finished to the approved colours.

Backs of wood door and similar frames an the surfaces of other new or prefixed joinery in contact with brickwork, etc. and built in as the work proceeds, shall be primed or sealed before building in to prevent moisture seeping into the wood from the mortar bedding.

Tongued and grooved and rebated edges of boards in batten doors and other such like inaccessible parts of new joinery shall, before assembly, be primed, or where the joinery is to receive a finish other than paint, be given one coat of such other finishing material.

All new external structural timbers shall be primed before the timbers are fixed in position and shall include all surfaces such as backs of fascias and barge boards.

RATES: — Rates for painting, etc. are to include for all preparatory work, and where spraying is employed, are to include or adequately masking all surrounding areas.

Where diameters of pipes are stated these are the nominal internal diameters, and rates for painting pipes are to include for painting the holderbats, hangers, clips, etc. supporting the pipes.

Rates are to include for providing all necessary dust sheets, covers, etc. taking all necessary precautions to prevent marking the surfaces of joinery, walls, floors, glass, electrical fittings, etc. All surfaces disfigured or otherwise damaged shall be completely renovated or replaced as necessary to the approval of the Department at the Contractor's own expense.

18. ROADWORK

The Contractor is referred to the preambles for "Earthworks" with particular reference to the full description, intent and meaning of the classification for excavations and the preambles for "Concrete, Formwork and Reinforcement"

The construction of the roads is to be carried out by an approved Specialist Sub-Contractor in accordance with the following specifications and all to the approval of the Department.

SUB-GRADE: — All materials placed in the sub-grade layer which is defined as being the 150mm thick layer immediately below the sub-base or the base course (where no sub-base is specified), shall conform to the following specification: —

(a) Minimum C.B.R. at 93% Mod. A.A.S.H.O. density = 10 %

(b) Maximum C.B.R. Swell = 1.5 %

(c) Maximum Plasticity Index if:
more than 30% passes the 2mm sieve = 12
less than 30% passes the 2mm sieve = 16

The sub-grade layer in cut areas shall be treated in place either to achieve a uniform standard of compaction or to break up undesirable formations of hard rock.

In the case of materials other than hard rock, treatment in place shall consist of scarifying or otherwise loosening to a depth of 150mm and re-compacting to a density of 93 % Mod. A.A.S.H.O. where directed, with the material stabilised in place before compacting.

In hard rock, treatment in place shall consist of thoroughly loosening to a depth of 450mm by rip in or blasting and then sized by rolling or knapping until the maximum dimension of any spall shall be not more than 300mm.

Compaction of the rock in the sub-grade shall be achieved by spreading and sorting by bulldozer to a reasonable uniform thickness with sufficient fine material added to fill the voids and bind the surface.

Compaction shall be achieved by means of a vibratory roller until the Department is satisfied that the mass is sufficiently dense, to provide a stable sub-grade layer.

Density tests shall be carried out at the minimum rate of one test per every 500m^2 of sub-grade area or not more than 50m apart but not less than four tests for smaller areas and shall assess the full layer thickness. The costs of such control tests shall be included in the Contractor's rate for sub-grade treatment. The Department may; at its discretion, arrange for independent check tests to be performed, but the costs of the tests in this instance will be borne by the Administration.

Processing of the material will be measured under the relevant items. An approved total weed killer shall be applied during the formation of the sub-grade. The rate of application shall be in accordance with the manufacturer's specification.

Rates shall include for the supply, delivery, spreading and stabilisation with lime, if required, and compacting and shaping to correct lines and levels.

The lime and method of mixing and watering shall be as described in the specification for stabilisation.

SUB-BASE: — All material placed in the sub-base layer, which is defined as being that layer of 150mm thickness immediately below the base course layer, shall conform to the following specification: —

	Unstabilised	Stabilised
Minimum C.B.R. at 95 % Mod. A.A.S.H.O. density	70%	50%
Minimum C.B.R. Swell	0, 5%	0, 5%

Maximum Plasticity Index	10	10
Minimum Liquid Limit	35%	35%
Maximum size of aggregate	63mm	63mm
Material passing the No. 75 micrometer sieve shall not exceed	25 %	
Minimum relative compaction in place	95 % Mod. A.A.S.H.O.	

Combined coarse and fine sand density fractions shall exceed 35 % of the soil mortar

Unless otherwise specified, the responsibility for obtaining material that conforms to the above specification rests with the Contractor who will be required to perform his own tests to prove compliance, and to submit samples to the Department before the material is delivered on site. Further control tests will be required by the Department during the placing and compaction of the material, the locations of which will be selected at random.

Should the Contractor wish to use material from the site excavations, he shall first obtain the approval of the Department. His rates shall in this case include for the selection and stockpiling.

Density tests shall be carried out at the minimum rate as specified for the sub-grade layer.

The layer shall be finished off to present a uniform texture and tightly bonded surface.

Rates shall include for the supply, delivery, spreading and stabilisation with lime, if required, and compacting and shaping to correct lines and levels.

The lime and method of mixing and watering shall be as described in the specification for stabilisation.

The finished surface shall be within 20mm of the design level. The finished width shall not be less than the design width. The average of five thickness tests at the rate of one test for every 200m^2 of surface shall not be less than 150mm and at any point not less than 130mm.

The surface finish when measured under a 3m straight edge shall have no slacks or bumps greater than 5mm.

The cost of the density control tests shall be included in the Contractor's rate for sub-base construction. The Department, at his discretion, may arrange for independent check tests to be conducted, and the costs in these instances will be borne by the Administration.

STABILISATION: — The stabilisation agent shall be slaked lime of the calcium type conforming to the requirements of SANS Specification 824.

The rate of application shall conform to the design rate and all materials to be stabilised shall be approved by the Department before processing.

The material shall be spread in a uniformly thick loose layer over the full area and thoroughly dried by scarifying or blading with a grader to ensure exposure to the air of all particles and to ensure thorough mixing to obtain a uniform grading of the material.
When the material has been approved as being ready for stabilising it shall be lightly rolled to facilitate the spreading of the lime. The lime shall be evenly applied to the surface, preferably by mechanical spreader, at the specified rate and thoroughly mixed by rotavator or disc harrow until a uniform integrated mixture of uniform colour is obtained over the full depth of the layer.

Before mixing is commenced, the Contractor shall satisfy the Department that the lime has been applied at the specified rate.

Immediately after the lime has been mixed in, water shall be added in small increments by suitable watering equipment and mixed into the layer until the required water content has been obtained which shall not exceed the Mod. A.A.S.H.O. optimum plus 2%:

The efficiency of the spreading and mixing shall be measured by Lime Determination Test according to A.S.T.M.D. Test Number 3155/1973 or the California Test Method No. 338-B July 1996. Only where the result from every 15 tests at locations selected by the Department indicate that more than 90 % of the layer has a time content exceeding 60 % of the nominal lime content will the work be accepted, provided that the coefficient of variation shall not be greater than 25%.

The test positions shall be spaced at one for every 100m^2 of surface area, but shall not be spaced, greater than 20m apart

BASE COURSE: — When the sub-grade has been prepared and approved, the base course, consisting of one of the following, shall be formed to the compacted thickness specified.

Crusher Run Base Course
Crusher-run base course shall be fresh dolerite, hard blue tillite, quartzite, fresh granite, fresh basalt or other stone which meets the following specifications.

TABLE F: CRUSHER RUN BASE COURSE: STONE SPECIFICATIONS

Sieve Size	% Passing
37.5mm	100
26.5mm	82 - 95
19.1mm	70 - 85
13.2mm	58 - 75
4.75mm	34 - 55
Sieve Size	**% Passing**
2.00mm	22 - 40
0.425mm	10 - 25
0.075mm	5 - 12

Minimum C.B.R. @ 98% Mod. A.A.S.H.O. density	80%
Maximum C.B.R. Swell	0, 5 %
Maximum Liquid Limit	25
Maximum Plasticity Index	4
Maximum Linear Shrinkage	2
Minimum Sand Equivalent Value	30
Maximum Flakiness Index	35

The soundness of the aggregate shall be such that after 5 cycles using Magnesium

Sulphate it shall not show a loss of more than 15% by weight.
The maximum Aggregate Crushing Value should not exceed 30.
The moisture content used for field compaction shall not exceed the Mod. A.A.S.H.O. optimum plus 2 %.

Natural Ground Base Course

Natural ground base course shall be approved stone which meets either of the following specifications.
Natural Gravel (Unstabilised)

Minimum C.B.R. at 98% Mod. A.A.S.H.O.	80 %
Minimum C.B.R. Swell	0.5 %
Group Index value	0
Maximum Plasticity Index	4
Maximum Liquid Limit	35
Maximum Linear Shrinkage	2
Minimum Sand Equivalent Value	30
Maximum size of particle	53mm

Material passing No. 75 micrometer sieve shall not exceed 25 %

The combined coarse sand and coarse/fine sand fraction shall not exceed 35 % of the soil mortar

Natural Gravel (Stabilised with Lime)
Lime must comply with SANS Specification 824 Minimum C. B .R.

at 98% Mod. A.A.S.H.O. density,	160	140	120
provided that the minimum C.B.R. before stabilising, at 95 % Mod. A.A.S.H.O. density	30	45	60
Maximum C.B.R. S well			0, 5%
Maximum Plasticity Index	4		
Maximum particle size	2/3 layer thickness		
Maximum percentage passing No. 75 micrometer sieve	25		
Grading Modules	1, 5		

The responsibility for obtaining suitable base course material complying with the above rests with the Contractor, unless otherwise specified, and the provisions for sub-base material in regard to tests, etc. to prove compliance with the specification shall apply to the base course.

During construction, the base course shall be evenly distributed over the sub-grade. The stone shall then be rolled with a 4 to 5 tonne roller or equal unless otherwise instructed. After a few passes of the roller the surface shall be checked for shape camber and levels and all depressions filled in. Rolling and trimming shall continue until the surface is true to required levels and falls.

Minimum density in place after compaction shall be 98% Mod. A.A.S.H.O. density.

CHIP AND SPRAY SURFACING
Binders
One of the following may be used: —
M.C. 3000 Bitumen to SANS Specification 308 (150/200 Pen.)
M.C. 800 Bitumen to SANS Specification 308 (150/200 Pen.)

RTH 45 / 50 Tar to SANS Specification 748 Spray-grade 60% emulsion where approved or specified by the Department. If emulsion is used then the specified application rates shall be increased to give the required net bitumen content.

Cover Aggregate

All Cover aggregate used in the surface treatment shall be washed 13.2mm nominal sized crusher stone in accordance with SANS Specification 647.

Aggregate Crushing Value shall not exceed 15.

Binder shall be applied after the prime coat has dried completely and all tackiness has vanished.

The binder is to be applied by means of a distributor at a rate of 1.1 litre/m2 followed immediately afterwards by the spreading of a cover aggregate of 13.2mm stone at the rate of $125m^2$ / m^3. The aggregate is to be spread by means of an approved chip spreader; band spreading will only be permitted in those areas inaccessible to the spreader. The aggregate is to be rolled immediately with two passes of a pneumatic tyred roller. When the binder has set the surface shall be drag-broomed twice in each direction and then rolled again with four passes of the roller during the heat of the day or until the aggregate is firmly keyed into a tight surface.

DOUBLE SEAL COAT WITH BLACK TOP SURFACING: — The prime and first seal coat shall be applied as previously specified.

After the first seal coat has been drag-broomed and rolled as previously described, the binder shall be applied to the surface at a rate of 0.8 litre/in 2 followed immediately by the spreading of 6.7mm stone chips at the rate of $150m^2/m^3$. This stone aggregate shall then be drag-broomed and rolled as previously described.

A seal spray having a net bitumen content of 0.7 litre/in^2 shall then be applied to the surface when this coat has dried completely, and shall be rolled to firmly bed any loose aggregate.

If the surface is to be opened early to traffic, it shall be covered very lightly with sand or crusher dust distributed evenly with a hessian drag and back rolled with wet wheels before opening to traffic.

SLURRY SEAL SURFACING: — The aggregate for slurry seal shall conform to the following grading: —

Sieve Size (mm)	Percentage Passing
4, 75	100
2, 36	90—100
1, 18	65—95
0, 600	42—72
0, 300	23—48
0,150	10—27
0, 075	5—12

Slurry sand shall be crusher sand with a minimum sand equivalent of 35.

Binder — Stable grade emulsion (60%)
Anionic to SANS Specification 309
Cationic to SANS Specification 548

Consistency of the slurry shall consist of 90% crusher sand, cement filler not less than 1% and net binder content of not less than 9% by weight. Water to be added as required. As a guide, approximately 300 litres of emulsion and 160 litres of water are required per cubic metre of slurry.

The slurry shall be machine mixed and wherever possible applied by means of a spreader box. The rate of application shall be 170m^2/m^3. The slurry shall be of a creamy, homogeneous mixture, free of lumps, and if the mixture shows signs of breaking before application to the surface it shall be discarded.

After the first seal has been approved by the Department, but before the application of the slurry, a fog spray comprising of a solution of 1 part emulsion to 3 parts water shall be applied at a rate of 0.8 litre/m^2 to cover the aggregate. The application of the slurry may commence when the fog spray has been applied to assist with the spread of the slurry and to smooth out squeegee marks the slurry shall, immediately after being applied and before it has broken, be smoothed by a damp hessian drag either attached to the spreader box or pulled over by hand.

After the slurry has set it shall be covered by two passes of a pneumatic-tyred roller during the heat of the day.

The permissible variation in the application of the slurry shall not vary from the specified rate by more than 10%.

PREMIX TARMACADAM SURFACING

Prime Coat

When the base course is complete and dry it shall be cleaned of all loose material and be given a prime coat of one of the following primers: —
M.C. cut-back bitumen.
Tar Primer R.T.H. 3/P.
Emulsion Primer (60%).

The rate of application of the primer shall be within the range 0.65—1.0 litre/m^2, the actual rate to be determined by test and observation on site. Where emulsion primer is used, the application rate shall be increased to give the required nett bitumen content.

Hand spraying shall be used only in those areas inaccessible to mechanical distributors. Before spraying is commenced, the surface shall be lightly watered to settle dust.

Single Coat Premix Tarmacadam

When the prime coat has dried the single coat premix wearing course, of the compacted thickness specified, shall be constructed.

The wearing course shall be Type A (Hot Mix), unless otherwise specified or approved by the Department, and shall conform to the following specification: —

TABLE G: SINGLE COAT PRE-MIX WEARING COURSE: SPECIFICATIONS

	Screen Size mm	A Hot Mix	B Hot Mix	C (Kerbs)

Aggregate Grading Per Cent Passing	26.5 19.0 13.2 9.5 6.7 4.75 2.36 1.18 0.6 0.3 0.15 0.075	100 100 80 - 100 70 - 90 - 50 - 70 35 - 50 27 - 40 19 - 30 13 - 23 8 - 16 4 - 10	- - 100 80 - 95 60 - 75 45 - 60 28 - 42 18 - 30 7 - 20 2 - 10 0 - 5 0 - 4	- - - 100 90 - 100 65 - 75 52 - 62 50 - 60 45 - 55 30 - 40 9 - 19 4 - 8
Grade Binder		60 / 70	Emulsion	60 / 70
Nominal Nett Binder Content		5.5 % +/- 0.38	4.75 % +/- 0.3	5.5 % +/- 0.3

Penetration grades to comply with SANS Specification 307.

Cut-back bitumen to comply with SANS Specification 308.

Maximum heating temperature of bitumen 170^0C.

Delivery temperature at the paver for hot mixes 130—160ºC.

For every 500m^2 of area paved the Contractor shall produce an extraction test result from a sample taken during laying operations showing grading and bitumen content of the premix carpet. The test as specified or any further tests to prove compliance with the specification shall be at the Contractor's expense.

In order that the stone and binder shall be properly mixed, this operation must be carried out in a pug-mill mixer or by hand with shovels and wheelbarrows or on metal plates, in which case the binder must be added in the correct proportions in small quantities. Mixing shall continue until the aggregate is uniformly coated with the binder. Bituminous surfacing shall not be carried out in rainy weather nor when atmospheric shade temperature is below 10^0C. Immediately after mixing, the surfacing materials must be spread and rolled on the same day. Spreading shall be done evenly over the base to ensure a consolidated thickness as specified and shall be performed by means of a mechanical spreader or by a drag spreader, or by hand, using rakes and screeds.

Where hand spreading is used, the premix must not be dumped on the base, but taken from the boards on barrows by shovel and then evenly distributed over the base. Hand raking must be reduced to a minimum to avoid segregation of aggregate. Rolling shall commence as soon as the binder has set sufficiently and, unless otherwise instructed, this shall be done with a 4 to 5 tonne roller or equal.

Places inaccessible to a roller may be compacted by means of 12kg tampers. The surface shall be rolled true to line and level without slacks or irregularities.

After three days the rolling shall be repeated during the hottest part of the day and a light application of fines may be added during the final rolling.

Premix Tarmacadam Kerb

Premix kerbs are to be Type C as specified above and constructed to give the following compacted size: —

Width at top	125mm
Width at base	230mm

Height 150mm

PRE-CAST CONCRETE PAVING BLOCKS: — shall be of the type, class and thickness specified, of approved colour and shall comply with SANS Specification 1058. Paving blocks which fail to meet these requirements must immediately be removed from the site and replaced at the Contractor's expense to the satisfaction of the Department.

Paving blocks shall be one of the following types as specified: —
Type S-A: — allows geometrical interlock between all vertical faces of adjacent blocks,
Type S-B: — allows geometrical interlock between some vertical faces of adjacent blocks.
Type S-C: — allows no geometrical interlock between vertical faces at adjacent blocks.

Paving blocks shall be one of the following classes as specified: —
Class 25: — average compression strength of at least 25 MPa.
Class 35*:* — average compression strength of at least 35 MPa.

Paving blocks are to be laid to approved patterns as specified and in accordance with the relevant clauses (excluding Clause 8) of SANS Specification 1200 MJ on and including a sand bed of the compacted thickness specified. After laying, the paving blocks are to be compacted by means of a vibrating plate compactor with the joints filled in, after compaction, by sweeping in jointing sand.

Sand for bedding shall conform to the following grading: —

Sieve size (mm)	Percentage Passing
9, 52	100
4, 75	95-100
2, 36	80-100
1, 18	50-85
0, 60	25-60
0, 30	10-30
0, 15	5-15
0,075	0-10

Sand for jointing shall pass a 1.18mm sieve and shall contain 10-50% of material that passes a 0,075mm sieve.

Spaces constituting less than 25% of a full block unit and of 25mm minimum dimension at perimeter edges of pavings against kerbs, buildings, inspection chambers, etc. are to be filled with Class B concrete trowelled to a smooth even surface to match paving blocks.

Rates for paving block pavings are to include for all straight cutting and waste, all half blocks at straight edges, filling with concrete as described, fitting, protecting from injury and cleaning down at completion.

KERBS

Generally

The kerbs are to be laid before the base course is commenced to the lines and positions as shown on the drawings. The Contractor is to allow sufficient time for the mortar bedding and joints to set and is to take all necessary precautions to maintain the line of the kerbs especially while rolling the base course and surfacing, as no claims in this connection will be considered.

Rates for kerbs are to include for necessary excavation, well consolidated bottom under kerbs and for filling and ramming to secure the kerbs in position.

Pre-cast Concrete Kerbs

Pre-cast concrete mountable kerbs as SANS Fig8 are to be of concrete Class 20 (20 MPa) and of the sizes described in the items, cast generally in 1m lengths, and finished smooth off the mould on top edge and both sides, with angles rounded, and rates are to include for all necessary formwork and moulds. The kerbs are to be bedded on and including a mat of

1:3 cement mortar, and the abutting ends of the kerbs are to be fully jointed in a similar mortar and pointed with a keyed-in joint on top edge and exposed sides.

Brick on edge kerbs
Brick on edge kerbs are to be of extra hard burnt bricks of the colour specified. The kerbs are to project 10mm above the finished tarmacadam level and are to be bedded on a mat of 1:4 cement mortar, and the abutting ends of bricks are to be fully jointed in a similar mortar and pointed with a keyed-in joint on top and exposed sides.

19. FENCING AND GATES

GENERALLY*:* — The Department shall be responsible for the initial location and exposure of all necessary boundary beacons and their indication to the Contractor at the site handover. The Contractor shall be responsible for subsequently ensuring that these beacons remain undisturbed and that the fencing is correctly aligned between boundary beacons. Should, during setting out of the further boundary beacons be uncovered or located and reasonable doubt arise regarding the correct alignment of fencing, then the Contractor shall be responsible for immediately notifying the Department, in writing, of such doubt, in order that the setting out may be checked and rectified, if necessary.

All bushes, trees, old fencing, rocks, debris, long grass and other obstructions shall be removed from the fencing line to produce a clear even strip 500mm wide on either side.

Trees, rocks or other items of horticultural or archaeological interest that are not to be removed will be indicated by the Department.

Straining Posts: - shall be erected at ends, corners and intermediately at not exceeding 30m centres with standards or intermediate posts erected between posts at not exceeding 3m centres.
Where fences are erected directly over boundaries, corner beacons shall be preserved by splaying the corner by planting two straining posts, each with one stay, 1 m from the beacon peg.
Security fences (i.e. fences with projecting overhangs if specified) shall be sited 350 mm back from the boundary line so that the end of the overhang is exactly on the boundary line.

SECURITY FENCING:

2.3m High security fencing shall consist of: -

1) Straining and Intermediate Posts (2.9mtr long).
2) Stays (2.6mtr long).
3) Welded mesh fencing (1.8mtr high).
4) Razor wire.
5) Concrete ground beam.
6) Tubular steel gate posts (when specified).

Straining and corner posts shall be 150mm ø x 3mm wall thickness steel tubing, in lengths as specified, with upper end capped and 3mm thick x 300mm x 300mm footplate welded to base. The whole shall be **hot dipped galvanized**. 80mm diameter stays x 3mm wall thickness shall be secured to posts with galvanised bolts. Straining posts to be positioned at maximum 30mtr c/c. Bottom of posts bedded in concrete to be painted with bitumen paint prior to erection. Where holes have to be drilled on site, drilling shall be cold galvanized before corrosion sets in.

Intermediate posts shall be 2.9mtr long x 100mm x 100mm square pre-stressed, precast concrete posts with top end splayed, spaced at maximum 3mtr apart. Stays for posts shall be prestressed reinforced concrete members of 75mm x 75mm x 2.6mtr long, splayed at the top end, with a 10mm ø x 50mm long galvanized steel pin attached to fit into a drilled hole in the upright and bonded to posts with approved epoxy.

Fence shall comprise of galvanized rectangular welded mesh fencing 1,80mtr high x 3.15mm ø x 25mm x 50mm rectangles fixed to 8 gauge or 3.15mm diameter – as

specified - hardened galvanized steel straining wires x 5, spaced vertically at 450mm ¢. Welded mesh shall be secured to straining wires with 2mm ø galvanized tying wire spaced at a maximum of 250mm between ties. Fencing overlap to be a minimum of 150mm.

Straining wires shall be fixed to posts with doubled strands of 2mm ø galvanized tying wire, pulled tight around posts and wound tightly around the straining wires.

Coils of 500mm ø galvanized flat wrap razor wire shall be fixed vertically above the welded mesh to a height of 450mm above the top of the welded mesh. Razor wire shall be supported on and fixed to three strands of galvanized double strand barbed wire. Barbed wire shall be fixed to the posts in the same manner as the straining wires.

Razor wire shall be fixed to the barbed wire at every intersection and laced to the concrete posts with galvanized tying wire.

A 250mm wide x 150mm minimum depth concrete ground beam of 15mpa strength shall be excavated for and cast along the entire length of the fence. Shuttering for the ground beam sides shall be provided as required. Finished level of the ground beam shall be 50mm above final ground level at the highest point, finished in a straight line both vertically and horizontally. 75mm of the welded mesh fencing and the bottom straining wire shall be embedded in this ground beam to secure the lower fence line. The top of the concrete beam shall be shaped to allow water to run off the top of the beam to prevent water collecting and standing on top of the beam.

At any change in direction of the fence line, two 150mm ø x 3mm wall thickness straining posts shall be erected with bottom ends embedded in a common concrete base with each post stayed separately.

Concrete bases for posts shall be Class B (1:3:5-19mm stone) size 400 x 400 x 500mm deep, unless otherwise specified, with tops of bases 100mm below ground level.

When required, gateposts shall be supplied in steel tubing complying with CKS 82, 150mm ø x 5mm wall thickness, in lengths as specified, with upper end capped with 1.6mm thick pressed mild steel domed cap welded on and 3mm thick x 300mm x 300mm footplate welded to base. Gateposts are to be drilled and fitted with mild steel ferrules welded into position to receive 20 mm ø mild steel hinges. Threaded 12 mm ø studs or approved stay collars are to be fixed on to the posts to locate and secure the top ends of stays. The whole shall be hot dipped galvanized. Where holes for the threading and fixing of straining wires are required, holes shall be drilled on site and cold galvanized on completion.
Stays shall have the top end flattened, bent as required, holed 12 mm ø for bolting to post and the whole hot dip galvanized.

Mild steel tubing for gate components shall comply with SANS Specification 657 Part 1. The diameters specified are the nominal external diameter of the tubing.

Straining wire: - shall be as specified, or either Type 1 galvanized wire of 3,15 mm diameter or Type 2 PVC coated galvanised wire with 3, 15 mm diameter core wire PVC coated to an overall diameter of 3,95 mm. Stainless steel straining wire when specified shall be 2,50 mm diameter A.I.S.I. Type 304 stainless steel, strained between posts and tied to same at terminal ends by turning each wire twice around the post and tying off by twisting it a minimum of three turns around the strained wire.

Binding or Tying wire: - shall be as specified, either Type 1 galvanised wire of 2 mm diameter or Type 2 PVC coated galvanised wire with 2 mm diameter core wire PVC coated to an overall diameter of 2, 80 mm.

Galvanized barbed fencing wire: - shall consist of two strands of 1, 60 mm diameter high tensile steel wire twisted together with barbs at 125 mm centres and each row of barbed wire shall be strained between posts and tied to same at ends by turning each wire around the post and tying off by twisting it a minimum of three turns around the strained wire.

Galvanising: - shall comply with SANS Specification 763 and all items of posts, stays, gate

framing, etc., described as galvanised shall be hot dipped galvanised after fabrication with Class A galvanising with all internal and external surfaces fully coated.

GATES: — Generally single gates and double gates shall be of the sizes stated and formed with mild steel tubular framing all round, covered with chain link wire mesh of the type specified laced to framing. Tubular framing to gates shall be mitred and welded at corners and, at all other intersections, the tubular framing shall be scribed and welded together with all welds ground smooth.

Preferred gate hinges are Bullet Type or through pin type hinges.

Where gates are to be hung on precast concrete posts, hinges shall be fixed to and including mild steel clamps, each formed of two 50 x 5 mm mild steel plates 200 mm long, twice holed for and bolted on opposite sides of post with two 10 mm ø x 140 mm galvanized mild steel hex-head bolts and with each plate holed to receive 20 mm ø gate hinge.

Each single gate and one leaf of each double gate shall be fitted with gate latch formed of 25 x 6 mm mild steel bracket, 550 mm girth, twice bent to U-shape with centre section 150 mm high and with ends scribed and welded to tubular stile of gate. A locking bar formed of 25 x 6 mm mild steel plate, 100 mm long, twice holed 13 mm diameter for shackle of padlock and for pad bolt, shall be welded to inside of bracket. The sliding pad bolt shall be formed of 12 mm ø mild steel rod, 220 mm long, with 25 x 6 mm mild steel flat bar 60 mm long welded on at one end and holed 13 mm diameter for shackle of padlock. The stile of the gate and the locking post or locking stile of the double gate shall be holed for and fitted with mild steel ferrule welded in to receive pad bolt. In addition, fittings to each leaf of double gate shall comprise 50 x 6 mm mild steel locking bar, 80 mm long, holed 20 mm ø for shackle of padlock and welded to locking stile of gate and drop bolt formed of 16 mm diameter mild steel rod, 575 mm girth, once bent to L-shape, fitted through and including 20 mm internal diameter mild steel sleeve welded to gate at bottom corner, with 12 mm diameter mild steel peg stay 25 mm long welded on to gate frame.

A concrete gate stop block size 230 x 230 x 230 mm deep with two 20 mm internal diameter mild steel sockets, each 75 mm long, cast into top shall be embedded in the road surface between each pair of double gates in the closed position. A similar gate stop block but with one socket shall be embedded in the road surface to each leaf of double gate in the open position.

Each single or double gate shall be fitted with an approved 51 mm brass padlock with hardened steel shackle and two keys.

Gates for 1, 20 m high fencing

Single gates shall be size 1,00 x 1,20 m high, each hung on hinges as stated above and formed of 32 mm diameter x 2 mm wall thickness mild steel tubular framing all round. Each gate shall be fitted with locking pad bolt with brass padlock.

Double gates shall be in two equal leaves with each leaf size 2.25 x 1, 20 m high, hung on hinges as stated above, formed of 38 mm diameter x 2 mm wall thickness mild steel tubular framing all round with two 38 mm diameter x 2 mm wall thickness mild steel tubular braces welded on between bottom corners and centre of top rail of each leaf. Each pair of double gates shall be fitted with locking pad-bolt, locking bars with brass padlock, drop bolts and concrete gate stop blocks as specified above.

Gates for 1, 50 m high fencing

Single gates shall be size 1, 00 x 1, 50 m high as described for gates for 1, 20 m high fencing but with each stile of gate extended 330 mm above top rail and braced between top rail and top of extension arm with 32 mm diameter x 2 mm wall thickness mild steel diagonal brace welded on and hung on hinges as stated above. Two rows of galvanised barbed wire, spaced 150 mm apart, shall be strained and tied to the extension arms.

Double gates shall be in two equal leaves with each leaf size 2, 25 x 1.50 m high with each hung on hinges as stated above, all as described for double gates for 1, 20 m high fencing but with each stile of each leaf extended 3 mm above top rail and braced between top rail and top of extension arm with 38 mm diameter x 2 mm wall thickness mild steel diagonal brace welded on. A vertical extension arm 330 mm high - formed of 38 mm diameter x 2 mm wall thickness mild steel tube - shall be welded on above centre of top rail. Two rows of galvanised barbed wire, spaced 150 mm apart, shall be strained and tied to extension arms.

Gates for 3, 00 m high fencing

Single gates shall be size 1,00 x 1,50 m high, hung on hinges as stated above and formed of 38 mm diameter x 2 mm wall thickness mild steel tubular framing all round with 38 mm diameter x 2 mm wall thickness mild steel horizontal centre rail. Each gate shall be fitted with locking pad bolt with brass padlock.

Chain link wire mesh fencing shall be carried over and above the top of the gate as previously described for fencing.

Double gates shall be in two equal leaves with each leaf size 2, 25.x 3, 00 m high, each hung each hung on hinges as stated above, and formed of 51 mm diameter x 2 mm wall thickness mild steel tubular framing all round with two 51 mm diameter x 2 mm wall thickness mild steel tubular braces welded on between bottom corners and centre of top rail of each leaf. Each pair of double gates shall be fitted with locking pad bolt, locking bars with brass padlock, drop bolts and gate stop blocks.

Gates for 1, 8 m high security fencing:

Single gates shall be size 1,00 x 1,80 m high, hung on hinges as stated above and formed of 38 mm diameter x 2 mm wall thickness mild steel tubular framing all round with 38 mm diameter x 2 mm wall thickness mild steel horizontal centre rail. Each gate shall be fitted with locking pad bolt with brass padlock.

Single gates shall be hung on mild steel tubular gate posts with cranked overhang when specified and the galvanised barbed wire overhang shall be carried over above the gate as previously described.

Double gates shall be in two equal leaves with each leaf size 2, 25 x 1, 80 m high, each hung on hinges as stated above and formed of 51 mm diameter x 2 mm wall thickness mild steel tubular framing all round with two 51 mm diameter x 2 mm wall thickness mild steel tubular braces welded on between bottom corners and centre of top rail of each leaf. The stiles of each gate shall be extended 450 mm high above the top rail and braced between top rail and top of extension arm with 51 mm diameter x 2 mm wall thickness mild steel diagonal brace welded on. A vertical extension arm 450 mm high formed of 51 mm diameter x 2 mm wall thickness mild steel tube shall be welded on above centre of top rail. Three rows of galvanised barbed wire, spaced 150 mm apart, shall be strained and tied to extension arm. Each pair of double gates shall be fitted with locking pad bolt, locking bars with brass padlock, drop bolts and gate stop blocks.

Double gates shall be hung on posts without cranked overhang but with the posts extended 450 mm high above top of chain link wire mesh fencing to receive continuation of barbed wire and razor wire.

Gates for 2, 40 m high security fencing

Single gates shall be of size 1, 00 x 2, 00 m high, all as described for gates for 1, 80 m high security fencing.

Chain link wire mesh fencing shall be carried over above the top of the gate to an overall height of 2, 40 m with the razor wire carried across between the gateposts.

Double sates shall be in two equal leaves, with each leaf 2, 25 x 2, 40 m high, all as described for double gates in 1, 80 m high security fencing.

Double gates shall be hung on posts without cranked overhang but with the posts extended 450 mm high above top of chain link wire mesh fencing to receive continuation of razor wire.

SUBMISSIONS FOR PREFABRICATED TIMBER ROOF TRUSSES

Letter Ref. TR 1

I / We hereby undertake to be responsible for the design of the total timber roof construction and will satisfy myself / ourselves that the fabrication and erection is in accordance with my / our design.

Project: _____

_____

Part(s):

_____

_____

NAME OF FIRM:

_____

SIGNATURE: _____ QUALIFICATION:

_____

DATE: _____

Letter Ref. TR 2

I / We am/are satisfied that the fabrication and erection of the total roof construction has been completed in conformity with my / our design.

Project: _____

_____

Part(s):

_____

_____

NAME OF FIRM:

_____

SIGNATURE: _____ QUALIFICATION:

_____

DATE: _____

SUPPLEMENTARY PREAMBLES

The following Supplementary Preambles are to be read in conjunction with the "Standard Preambles to all Trades" included here before and are to apply to this Contract.

Where these "Supplementary Preambles" are at variance with the "Standard Preambles to all Trades" referred to above, such variances are to take precedence and are to apply to this Contract.

1. ALTERATIONS

All Notes, Preambles, etc. applicable for the various trades in the Bills of Quantities, will apply equally to the trades in this Bill.
Tenderers are advised to visit the site and satisfy themselves as to the nature and extent of the work to be done, and also to examine the condition of the existing building.

Tenderers are advised that all materials from the pulling down (except where described to be re-used or handed over to the Department) will become the property of the Contractor, and all these materials, together with all rubbish and debris, must be immediately carted away, and the site left clean and unencumbered. Materials, etc. which are described to be handed over to the Department are to be carefully dismantled where necessary, and neatly stacked where directed on site. Items described as removed shall be removed from site.

Credit for the value of the materials from the pulling down may be allowed for on the Final Summary page.

Prior to the removal of any timbers from the site, they are to be inspected by the Government Entomologist as laid down in Section 32 of the Government Forest and Veld Conservation Act of 1941 (Act 13 of 1941) as amended. If any of the timbers are infested with wood destroying agencies, they are to be disposed of in the manner prescribed by the Government Entomologist.

The Contractor is to give ample notice to the Department and Local Authorities regarding any disconnections necessary prior to the removal or interruption of electric light or telephone cables, water and sanitary services, etc.

Tenderers are advised that adjacent sections of this building will be occupied during the building operations, and the Contractor is required to carry out the work with as little noise, dust and disturbance as possible. Undisturbed access is to be given to patients, staff and visitors.

The Contractor is advised to check all dimensions affecting the existing building as he will be held solely responsible for all new work being of the correct size. All sizes stated are approximate and under no circumstances will claims be entertained should actual sizes of existing items on site vary marginally from the sizes stated in this document.

The Contractor will be held solely responsible for any damage to persons, property, and equipment and for the safety of the structure throughout the whole of the Contract, and must make good at his own expense any damage that may occur.

The Contractor must obey the instructions of the Department in carrying out any portion of the work which in his opinion requires expediting, and the Contractor shall give priority to such work as and when directed.

In taking down and removing existing work, the utmost care is to be observed to avoid any structural or other damage to the remaining portions of the building. The Contractor must also protect all work not removed, such as walls, floors, doors, windows or joinery, loose and fixed fittings and electrical equipment, appliances, etc. from damage during the progress on the works and provide all necessary materials in so doing.

Special care is to be taken not to interfere with any electric light, bell, power or telephone wires and fittings that may be encountered on site. New work to the existing electrical, air-conditioning, gas and telephone installations, etc. is included elsewhere in this document.

The Contractor must take the exigencies of the Hospital Service into consideration. Liaison is to be carried out through the offices of the Regional Engineer, with referrals to the Director: Physical Facilities Management for a final decision. No instructions may be received by the Contractor from the Hospital Authorities and all instructions are to be given by the Chief Department in writing before they are put in hand.

2. CONCRETE, FORM WORK AND REINFORCEMENT

Cement is to comply with:

SANS ENV 197 (1 to 2)
SANS ENV 413 (1 to 2)
SANS ENV 196 (1 to 7)
SANS ENV 196 (21)

as applicable, and replaces the following SANS Specifications in the Standard Preambles:

SANS 471 Portland cement (ordinary, rapid hardening and sulphate resisting)
SANS 626 Portland blast furnace cement.
SANS 831 Portland cement 15 (ordinary and rapid hardening)

3. MASONRY

Masonry is to comply with SANS Code of Practice 0249 and 0164 as applicable.

4. ROOF COVERINGS, ETC.

The installation of roof coverings and side claddings is to comply with SANS Code of Practice 0237 as applicable.

5. CARPENTRY AND JOINERY

Note:

All timber must be treated in terms of SANS Code of Practice 05 for GYMNOSPERMAE including all SA Pine species and ANGIOSPERMAE including all Eucalyptus species but excluding laminated timber.

It is now a compulsory requirement to use only treated timber in buildings. The treatment shall comply with SANS 457, 753, 754 or 1288 as relevant.

Reference must also be made to the appropriate Standard Preambles and SANS requirements for items not covered by these joinery preambles, etc. i.e. ironmongery, aluminium, glazing, paintwork, etc.

Where items are described as “plugged and screwed”, they are to include for plugging and screwing to new or existing brickwork or concrete, with heads of screws sunk and pelleted.

Sawn softwood timber: General, Stress Graded, Industrial, Brandering and Battens is to comply with SANS 1783 Parts 1 to 4 as applicable.

All hardwood is to be dark red Meranti, even in grain and colour selected for “Standard and Better” quality, from Malaysia, with a minimum density of 550 kg per cubic metre at moisture content of 12%, and is to comply with SANS 1099 as applicable.

Hardboard is, unless otherwise described; to be 3mm un-tempered hardboard for floor units and 6mm tempered hardboard for wall units.

Melamine faced moisture resistant V313 chipboard can be used when specified.

Materials generally are to comply with the following specifications and requirements as applicable:

TABLE H: CARPENTRY AND JOINERY: SANS SPECIFICATIONS

MATERIAL	SANS SPECIFICATION	GRADE OR CLASS
Softwood structural timber	1783	Parts 1, 2, 3, 4
Softwood engineering timber	1783	Parts 1, 2, 3, 4
Softwood studs for timber frames in building	1783	Parts 1, 2, 3, 4
Softwood brandering and battens	1783	Parts 1, 2, 3, 4
Softwood joinery timber	1783	Parts 1, 2, 3, 4
Softwood flooring boards	629	Flooring Grade
Hardwood joinery timber	1099	Heavy flooring board
Hardwood strip flooring	281	Knotty grade
Wooden ceiling and panelling boards	1039	As specified
Laminated timber (glulam)	1460	As specified
Gypsum, plasterboard	266	As specified
Wood fibreboard	540	As specified
Wood wool panels (cement bonded)	637	As specified
Fibre cement sheets: profiled and flat	685	As specified
Fibre cement boards	803	As specified
Plywood and composite board Particle Board: Highly Moisture resistant exterior and flooring type Interior Type	929 EN 312 EN 312	 Parts 1 to 7
Decorative laminates	SANS ISO 4586 and SANS 1405	High Pressure
Decorative Melamine Faced Boards	1763	
Wooden Doors (flush)	545	
Materials for thermal insulation of buildings	1381	As applicable
Mild steel nails	820	
Metal screws for wood	1171	
Creosote	538	As specified
Timber roof trusses	0243	SANS Code of Practice

6. CEILINGS AND PARTITIONS

Refer to Joinery Fittings regarding specifications and requirements of materials.

7. IRONMONGERY

Materials

i) Locks are to comply with SANS 4 as applicable
ii) Door closers are to comply with SANS 1510 as applicable
iii) Symbolic safety signs are to comply with SANS 1186 as applicable

All ironmongery, unless otherwise described, is fixed to timber.

Sheet steel furniture to comply with SANS 757 as applicable

8. METALWORK

Rates are to include for cutting to lengths, splay cut ends, shaping, holing, tapping, threading, forging, turning, fitting, assembling, welding, filing smooth, preparation, priming coats, hoisting, temporary bracing and fixing in position.

Towel rails are to be tubular Satin Chrome mild steel to diameters - minimum 19mm - and lengths as specified in matched Satin Chrome end pieces. End pieces to be either flat or bracket type - according to requirements, application and specification - plugged and screwed into walls with Chromed Brass screws.

Electro-plating is to comply with SANS ISO 1456 as applicable.

Curtain tracks to be "Forwin" Hospital Curtain Tracks as "Kirton" (Pty) Ltd. - or other approved -, including 15 wheeled runners per metre, hangers, brackets, stopped ends, etc. Hangers are to be suspended from roof timbers or concrete slab over – **not off the ceiling grid**. Allowance is to be made for necessary bends and curving as per plan supplied.
Curtains to be provided as (Chintz fabric (#155CZ) woven with 100% polyester yarn)

SHELVING FOR PHARMACIES: - Shall be epoxy coated steel shelving, either fixed to epoxy coated wall bands or free standing units as specified.

SHELVING FOR CSSD STERILE STORE: - Shall be slatted grade 304 stainless steel wall bands or free standing units as specified.

Aluminium Windows and Doors

NOTE:

Glazed aluminium alloy windows and sliding doors for external use are to comply with SANS 1651 as applicable.

All items must conform to and carry the Certification Seal of the AAAMSA and no items which are not so certified will be accepted on site.

The work is to be cleated and framed.

All visible surfaces are to have a 25 micron anodised finish as specified.

Anodised coatings on aluminium are to comply with SANS 999 as applicable.

Rates are to include for setting up and building in as well as for isolation material between the aluminium surfaces and adjacent surfaces of a differing material.

All visible surfaces are to be covered with a temporary protective tape, later to be removed.

Float glass for glazing is to comply with SANS CKS 55 and SANS 952 as applicable.

Safety and security glazing materials for buildings is to comply with SANS 1263(1) unless otherwise described. All panes are to be marked so as to be visible. Laminated safety glass is to carry a written five year guarantee.

Windows and doors are to be watertight.

Silicon pointing to windows and doors is covered elsewhere.

9. PLASTERING

Rates for new plaster, screeds, etc. to existing surfaces are to include for all preparatory work and forming a key.

Removal of paint and/or varnish as well as the roughening of the existing face brick surfaces both externally and internally to receive new plaster has been measured separately.

Plaster and screeds, etc. in patches is generally of an isolated nature and to existing surfaces. Portion of the work may be in narrow widths.
Where alterations are to be done to the existing structure, the new plaster, etc. has been measured to a point 300mm beyond the line of the alteration on the existing structure.

10. TILING

Ceramic Wall and Floor Tiles are to comply with SANS 1449 as applicable.

11. PLUMBING AND DRAINAGE

Water Supply and Drainage for Buildings is to comply with SANS Code of Practice 0252 as applicable.

Water Supply and Distribution System Components is to comply with SANS 1808 as applicable.

Electrical Water Heater:

Storage Heaters to comply with SANS 151.
Instantaneous Heaters to comply with SANS 1356 and IEC 335 (2-35).

12. GLAZING

Glass is to comply with SANS Specification 952.

Glass for glazing is to comply with SANS Specification CKS 55.

Safety and security materials are to comply with SANS Specification 1263 as specified.

Laminated safety glass is to carry a written five year guarantee.

SUPPLEMENTARY PREAMBLES

The following Supplementary Preambles are to be read in conjunction with the “Standard Preambles to all Trades WB20” included herebefore and are to apply to this Contract.

Where these "Supplementary Preambles" are at variance with the "Standard Preambles to all Trades" referred to above, such variances are to take precedence and are to apply to this Contract.

ALTERATIONS

All Notes, Preambles, etc. applicable for the various trades in the Bills of Quantities, will apply equally to the trades in this Bill.

Tenderers are advised to visit the site and satisfy themselves as to the nature and extent of the work to be done, and also to examine the condition of the existing building.

Tenderers are advised that all materials from the pulling down (except where described to be re-used or handed over to the Director) will become the property of the Contractor, and all these materials, together with all rubbish and debris, must be immediately carted away, and the site left clean and unencumbered. Materials, etc. which are described to be handed over to the Director are to be carefully dismantled where necessary, and neatly stacked where directed on site. Items described as removed shall be removed from site.

Credit for the value of the materials from the pulling down may be allowed for on the Final Summary page.

Prior to the removal of any timbers from the site, they are to be inspected by the Government Entomologist as laid down in Section 32 of the Government Forest and Veld Conservation Act of 1941 (Act 13 of 1941) as amended. If any of the timbers are infested with wood destroying agencies, they are to be disposed of in the manner prescribed by the Government Entomologist.

The Contractor is to give ample notice to the Director and Local Authorities regarding any disconnections necessary prior to the removal or interruption of electric light or telephone cables, water and sanitary services, etc.

Tenderers are advised that adjacent sections of this building will be occupied during the building operations, and the Contractor is required to carry out the work with as little noise. dust and disturbance as possible. Undisturbed access is to be given to patients. staff and visitors.

The Contractor is advised to check all dimensions affecting the existing building as he will be held solely responsible for all new work being of the correct size. All sizes stated are approximate and under no circumstances will claims be entertained should actual sizes of existing items on site vary marginally from the sizes stated in this document.

The Contractor will be held solely responsible for any damage to persons, property, and equipment and for the safety of the structure throughout the whole of the Contract, and must make good at his own expense any damage that may occur.

The Contractor must obey the instructions of the Director in carrying out any portion of the work which in his opinion requires expediting, and the Contractor shall give priority to such work as and when directed.

In taking down and removing existing work, the utmost care is to be observed to avoid any structural or other damage to the remaining portions of the building. The Contractor must also protect all work not removed, such as walls, floors, doors, windows or joinery, loose and fixed fittings and electrical equipment, appliances, etc. from damage during the progress on the works and provide all necessary materials in so doing.

Special care is to be taken not to interfere with any electric light, bell, power or telephone wires and fittings that may be encountered on site. New work to the existing electrical, airconditioning, gas and telephone installations, etc. is included elsewhere in this document.

The Contractor must take the emergencies of the Hospital Service into consideration. Liaison is to be carried out through the offices of the Secretary for Works, with referrals to the Chief Director: Professional and Technical Services for a final decision. No instructions may be received by the Contractor from the Hospital Authorities and all instructions are to be given by the Chief Director in writing before they are put in hand.

CONCRETE, FORMWORK AND REINFORCEMENT

Cement is to comply with:

SABS ENV 197 (1 to 2)
SABS ENV 413 (1 to 2)
SABS ENV 196 (1 to 7)
SABS ENV 196 (21)

as applicable. and replaces the following SABS Specifications in the Standard Preambles:

SABS 471 Portland cement (ordinary, rapid hardening and sulphate resisting)
SABS 626 Portland blast furnace cement.
SABS 831 Portland cement 15 (ordinary and rapid hardening)

MASONRY

Masonry is to comply with SABS Code of Practice *0249* and 0164 as applicable.

ROOF COVERINGS, ETC.

The installation of roof coverings and side claddings is to comply with SABS Code of Practice 0237 as applicable.

CARPENTRY AND JOINERY

Reference must also be made to the appropriate Standard Preambles and SABS requirements far items not covered by these joinery preambles. etc. i.e. ironmongery, aluminium, glazing. paintwork. etc.
Where items are described as “plugged and screwed”, they are to include for plugging and screwing to new or existing brickwork or concrete. with heads of screws sunk and pelleted.
Sawn softwood timber : General, Stress Graded, Industrial. Brandering and Battens is to comply with SABS 1783 Parts 1 to 4 as applicable.
All hardwood is to be dark red meranti, even in grain and colour, selected for "Standard and Better" quality, from Malaysia, with a minimum density of 550 kg per cubic metre at a moisture content of 12%, and is to comply with SABS 1099 as applicable.

Hardboard is, unless otherwise described, to be 3 mm untempered hardboard for floor units and 6 mm

tempered hardboard for wall units.

Chipboard is, unless otherwise described, to be 16 mm thick.

Melamine faced chipboard is to be 16 mm thick with a white melamine impregnated finish on both sides. Melamine faced chipboard in adjustable shelving is to be of the width as described with white plastic preglued edge strips, or fixed with contact adhesive, or similar, to both edges and ends of the shelves. The number of shelves is stated in descriptions.

Materials generally are to comply with the following specifications and requirements as applicable:

MATERIAL	SABS Specification	Grade or Class
Softwood structural timber	1783)	
S6ftwood engineering timber	1783)	
Softwood studs for timber frames in building	1783)	Parts 1, 2, 3.4
Softwood brandering and battens	1783)	
Softwood joinery timber	1783)	
Softwood flooring boards	629	Flooring grade Heavy flooring board
Hardwood joinery timber	1099	Knotty grade
Hardwood strip flooring	281	As specified
Wooden ceiling and panelling boards	1039	As specified
Laminated timber (glulam)	1460	As specified
Gypsum, plasterboard	266	
Wood fibreboard	540	As specified
Wood wool panels (cement bonded)	637	- -
Fibre cement sheets : profiled and flat	685	As specified
Fibre cement boards	803	As specified
Plywood and composite board	929	As specified
Particle board : highly moisture resistant exterior and flooring type	EN 312))	Parts 1 to 7
Particle board : interior type	EN 312)	
Decorative laminates	SABS ISO 4586 and)	High pressure
Decorative Melamine Faced Boards	SABS 1405) 1763	

MATERIAL	SABS Specification	Grade or Class

Wooden doors (flush)	545	- -
Materials for thermal insulation of buildings	1381	As applicable
Mild steel nails	820	- -
Metal screws for wood	1171	- -
Creosote	538	As specified
Timber roof trusses	0243	SABS Code of Practice

CEILINGS AND PARTITIONS

Refer to Joinery Fittings regarding specifications and requirements of materials.

IRONMONGERY

Materials

i Locks are to comply with SABS 4 as applicable

ii Door closers are to comply with SABS 1510 as applicable

iii Symbolic safety signs are to comply with SABS 1186 as applicable All ironmongery, unless otherwise described, is fixed to timber.

Sheet steel furniture to comply with SABS 757 as applicable

METALWORK

Rates are to include for cutting to lengths, splay cut ends, shaping, holing, tapping, threading, forging, turning, fitting, assembling, welding, filing smooth. preparation, priming coats, hoisting, temporary bracing and fixing in position.

Electro-plating is to comply with SABS ISO 1456 as applicable.

Aluminium Windows and Doors

NOTE:

Glazed aluminium alloy windows and sliding doors for external use are to comply with SABS 1651 as applicable.

All items must conform to and carry the Certification Seal of the AAAMSA and no items which are not so certified will be accepted on site.

The work is to be cleated and framed.

All visible surfaces are to have a 25 micron anodised finish as specified.

Anodised coatings on aluminium are to comply with SABS 999 as applicable.

Rates are to include for setting up and building in as well as for isolation material between the aluminium surfaces and adjacent surfaces of a differing material.

All visible surfaces are to be covered with a temporary protective tape, later to be removed. -

Float glass for glazing is to comply wth SABS CKS 55 and BS 952 as applicable.

Safety and security glazing materials for buildings is to comply with SABS 1263(1) unless otherwise described. All panes are to be marked so as to be visible. Laminated safety glass is to carry a written five year guarantee.

Windows and doors are to be watertight.

Silicon pointing to windows and doors is elsewhere.

PLASTERING

Rates for new plaster, screeds, etc. to existing surfaces are to include for all preparatory work and forming a key.

Removal of paint and/or varnish as well as the roughening of the existing face brick surfaces both externally and internally to receive new plaster has been measured separately.

Plaster and screeds, etc. in patches is generally of an isolated nature and to existing surfaces. Portion of the work may be in narrow widths.

Where alterations are to be done to the existing structure, the new plaster, etc. has been measured to a point 300 mm beyond the line of the alteration on the existing structure.

TILING

Ceramic Wall and Floor Tiles are to comply with SABS 1449 as applicable.

PLUMBING AND DRAINAGE

Water Supply and Drainage for Buildings is to comply with SABS Code of Practice ***0252*** as applicable.

Water Supply and Distribution System Components is to comply with SABS 1808 as applicable.

Electrical Water Heater
- Storage Heaters to comply with SABS 151.
- Instantaneous Heaters to comply with SABS 1356 and IEC 335(2-35).

GLAZING

Glass is to comply with BS 952.

Glass for glazing is to comply with SABS CKS 55.

Safety and security materials are to comply with SABS 1263 as specified.

Laminated safety glass is to carry a written five year guarantee.

ANNEXURE 2

GENERAL ELECTRICAL SPECIFICATION

(ALL IN CONTRACTS)

1. CONDUIT AND CONDUIT ACCESSORIES

1.1 Conduit

Conduit shall be of steel galvanised internally and externally, either solid drawn, or welded and not less than 20 mm diameter, with all rough edges removed. All tube ends removed. All tube ends are to be reamed. With screwed conduit one threaded end is to be fitted with a coupling and the other end is to be protected against damage.

UPVC conduit may only be used if permitted by the Head : Works and only in those areas which he may specify. In this case this conduit shall be according to SABS 950.

Conduit accessories, which are secured to the conduit by means of lugs, screws or setscrews, are not acceptable.

General requirements of conduiting to SABS IEC 60614 (1).

Metal conduits shall be fully in accordance with SABS 1065 PART I.

1.2 Conduit Accessories

All conduit accessories shall be galvanised both internally and externally and comply with SABS 1065 – PART II.

All screwed conduit fittings shall be of malleable cast iron.

Where fittings are fitted with covers, the covers shall be of galvanised pressed steel secured with brass screws.

1.3 Flexible Conduit

Flexible conduit shall be of the plastic covered metal type complete with brass connectors to the approval of the Head : Works.

2. INSTALLATION OF CONDUIT

2.1 General

Except where cables are specified for certain circuits, the installation(s) shall be tubed throughout in steel conduit. Split conduit is not permitted. All conduits shall, wherever possible, or unless otherwise specified or agreed, be concealed in the structural work.

Except where agreed or otherwise specified or indicated on the drawings, all conduit to points shall run via the ceiling and floor slabs or roof space. In damp situations and where exposed to the weather, the conduits shall be so installed as

to avoid, as far as possible, the condensation of moisture within them. All running joints are to be painted with an approved metal primer.

Mechanical and Electrical continuity must be maintained throughout the installation. Each length of conduit and every conduit fitting must be inspected for defects and all sharp edges or burrs must be removed before it is installed. All joints are to be tightly fitted together.

Running joints with long threads, where used, are to be fitted with a lock nut and the running thread shall not be longer in length than a coupling and lock unit.

In conduits smaller than 32 mm elbows and normal bends are not to be used but conduits are to be set to the required angles.

Flexible connections between conduit and appliance or other equipment shall be by means of flexible tubing (see Par 1.3).

No wiring shall be drawn into conduits until the conduits have been installed.

Where more than one socket outlet is connected on a circuit, the conduit shall be looped from the one outlet box to the following outlet box.

All switch-boxes, socket outlet boxes and any other purpose made metal box including distribution board trays shall be suitable treated against corrosion before installation with “Rustodian” or other approved metal primer.

All conduits shall be securely fixed into chases, and all flush switch and socket outlet boxes must be firmly embedded in cement mortar.

The Contractor shall make himself familiar with the positions of all fittings, such as blackboards, pinning boards, cupboards, shelving, worktops, etc, before commencing the conduit installation. The position of switches and socket outlets as indicated on the drawings are approximate only. The Contractor must verify that the final position of these will not be covered by the installation of the fittings referred to above, or come midway between the junction of any dados and upper wall finishes.

No extras will be entertained for moving switches or socket outlets as a result of the Contractor’s failure to verify the final positions of the fittings or type of wall finish.

2.2 **In Roof Spaces**

The conduit in roof spaces shall be installed parallel or at right angles to the roof truss members and shall be secured at centers not exceeding 1,2 m by means of galvanised saddles nailed to the timbers with galvanised clout nails. Crampets will not be allowed.

Crossing of conduits is to be avoided wherever possible. Where unavoidable, one conduit must be neatly set over the other. Where a number of conduits have to run back to the distribution board or switchboard, they shall run parallel to the distribution board or switchboard, and at saddle distance to each other wherever possible.

Conduit runs from distribution boards shall terminate in fabricated sheet steel draw boxes installed in the roof above the distribution boards. Each draw box shall be fabricated from 1,6 mm galvanised sheet steel with welded corners and

suitably treated against corrosion with "Rustodian" or other approved primer and finished in aluminium paint.

Each draw box is to be fitted with slip-on lid with a 13 mm skirt. The box shall be 75 mm deep, shall be rectangular in shape and the size of conduits entering or leaving the box. Conduits shall be fixed to the box by means of couplings and brass male bushes or lock nuts and brass bush-nuts.

Conduit droppers shall be neatly cut into timber wall plates and set to face the right direction. All sets must be uniform. Conduits may be set at angles only where droppers or ceiling points are within 230 mm of roof members.

No conduits are to be run over the top of gangplanks or trapdoors.

Draw-in boxes with metal covers shall be provided where required and shall be installed near the gangplanks, if any. All inspection conduit fittings in open roof spaces shall face upwards to facilitate wiring and to permit easy inspection. Three-way conduit boxes shall be used for tee-off purposed in open roof spaces. Inspection tees are not to be used except where otherwise agreed or specified.

All conduits extended into a roof space with a roof clearance of more than 900 mm shall be set onto the beam and extended into the roof for a distance where there is sufficient clearance. Under flat roofs or where there is less than 900 mm clearance, the conduit shall be installed as specified for tubing in concrete slabs, right angle bends should be kept to a minimum and the shortest route taken.

Where false ceilings occur they shall be tubed as called for in the detailed specification. Conduits in restricted spaces and run as for concrete slabs must however, be installed in a neat and orderly manner.

Conduits to ceiling points for all types of fittings must be firmly supported and shall terminate in a back entry conduit box. The conduit box shall be taken through to the face of the ceiling and finish flush. Where the ceiling brandering interferes with the installation of the ceiling point specified, the Contractor must trim the brandering to allow the conduit box to be taken through to the face of the ceiling as specified. Luminaires must be bonded to the conduit box by means of metal threaded screws.

2.3 **In Concrete Slabs**

In order not to delay building operations, the Contractor must ensure that all conduits and conduit fittings, which are to be cast in concrete, are laid in good time. The Contractor shall have a competent Electrical Artisan standing by during casting of concrete, etc, to ensure that the conduit boxes are not damaged during casting of concrete.

Draw boxes, expansion joints boxes and round conduit boxes are to be provided where necessary.

Deep type conduit boxes shall be used for side entering conduits and normal shallow boxes may be used for back entry conduits. No elbows, bends or sharp sets will be allowed in concrete slabs except in cases of conduits of 40 mm diameter or when larger sweeping bends will be permitted.

Common drawn and/or inspection boxes shall be used where there is more than one circuit involved. They shall be installed in lavatories, storerooms, or other inconspicuous places. Covers shall be of hardboard neatly finished to match the finished ceiling or wall surface, and shall be fitted parallel to the wall or ceiling.

All boxes, etc. are to be securely fixed to the shuttering to prevent displacement when concrete is cast. All conduits must be laid off the deck, supported and secured at regular intervals and installed as close as possible to the neutral axis of concrete beams and slabs.

Expansion joints shall be shown on layout drawings and shall consist of a metal box in which one conduit is fixed and the other capable of movement with the building's expansion and contraction. Earth continuity of these joints shall be maintained by means of stranded copper conductors bonded to the conduits in the box as shown on the drawing.

Earth conductors and clamps buried in concrete are not permitted.

Conduits must be spaced sufficiently apart to allow for proper concreting. All joints shall be painted with an approved metal primer after completion of the tubing installation, prior to the concreting. All exposed parts of the conduit installation shall be suitably, protected against corrosion at the discretion of the Head : Works.

Before any concrete slab is cast, all conduit droppers to switchboards shall be neatly spaced and rigidly fixed.

2.4 **Surface Work**

All conduit must be plumbed and leveled and only straight lengths shall be used.

In cases where doorframes are out of plumb, or fittings, beams etc, are out of level, the conduit shall be run parallel with the doorframes, fittings, beams etc.

No threads shall be visible when the conduit installation is complete, except on running couplings.

Running couplings shall only be used where unavoidable and shall be fitted with a sliced coupling as a lock nut.

No inspection or normal bends are to be used on surface work, except with the approval of the Works Inspector and where conduits of 32 mm diameter or larger are used. Conduits shall be set uniformly and inspection couplings shall be used where necessary.

Fittings, tees, boxes, couplings, etc, are to be cut into the surface to allow the conduit to fit flush against the surface or alternatively spacer bar saddles may be used. Conduit is to be bedded into any irregularities to avoid gaps between the surface and the conduit.

Double sets, where used, shall be parallel with no twists and shall be as short as possible. All conduits, which terminate at metal trays, boxes, industrial switches and plugs shall do so by means of couplings and male bushes. No couplings will be permitted in droppers of lengths less than 3.6 m.

Where crossings of conduits is unavoidable, purpose made metal boxes shall be used. The length of the box is to be 8 times the diameter of the largest conduit, the width one and half times the sum of the diameter of al the conduits, and the depth one and half times the diameter of the largest conduit with a minimum depth of 50 mm. The box shall be fitted with a neatly fitting cover and the finish shall be in keeping with the general layout.

Where a number of conduits are to be installed in parallel they shall be evenly spaced and grouped under one purpose made saddle. Conduit spacing shall not exceed 10 mm. The purpose made saddle shall be made of 25 x 2 mm galvanised steel strip or other approved material, formed to suit the curvature of the various conduits and shall be drilled and fixed by means of screws between. Saddles shall be spaced at intervals not exceeding 1.8 m, except for conduit droppers, which shall be saddled centrally between ceiling and accessory box. All saddles are to be secured to the wall by means of black japan or brass rounded head screws. Distribution boards, draw boxes, industrial switches and plugs, etc, shall be neatly recessed into the surface of plastered walls to avoid double sets or alternatively spacer bar saddles may be used. On face brick walls the conduit shall be tightly set into the switch or plug.

In situations where there are not ceilings, the conduits are to be run along the wall plates and tie beams.

No wiring is to be carried out until the tubing has been inspected and approved.

Where spacer bar saddles are used, these shall be installed at centers of 1 m for horizontal and 1.5 m for vertical runs.

All conduits shall be painted with an approved enamel paint to match the background colour.

2.5 Future Extensions

In roof spaces with a minimum clearance of 900 mm, switch and plug drips for future use are to be set 300 mm in the correct direction and shall be threaded and fitted with plugged couplings. Where the roof over a slab is to be removed for future expansions, conduits for future use are to terminate 40 mm above tie beams and shall be threaded and fitted with plugged couplings.

Where future extensions are to be below slabs, all switch, socket outlet and other conduit droppers are to terminate 130 mm below slabs or beams with conduit ends threaded and fitted with plugged couplings.

Where provision is made for future extensions to a concrete slab, all conduits required for future use are to project 130 mm from the slab. Conduit projections are to be painted with an approved anti-corrosive paint and must be fitted with plugged couplings.

All switch, plug and other outlet boxes required for future use shall be fitted with approved blank cover plates.

Unused lighting outlet boxes are to be fitted with round hardboard or plastic covers with brass cover screws, which shall fit flat on the finished ceiling.

2.6 Fixing of Conduits

Conduits shall be fixed to switch and socket outlet boxes by means of couplings and brass male bushes or lock nuts and brass bush nuts. Couplings and male bushes to be used on all surface work.

2.7 Chases and Building Work

Except where otherwise specified conduits, switch boxes, plug boxes and distribution boards are to be built into the brick walls by the Contractor. It will, however, remain the responsibility of the Contractor to ensure that the above-mentioned boxes and distribution boards are correctly built in and are firmly bedded and cemented into the walls, plumb and square.

The Contractor shall, unless otherwise specified, do all necessary chasing and cutting of bricks. All electrical materials (e.g. conduits up to 40 mm for UG cables, conduits, conduit boxes, distribution boards etc) must be supplied by the Contractor who must arrange to have these on site, and positioned when required for the building work. A competent Electrical Artisan must be in attendance and ensure that the conduits etc are correctly installed and positioned.

The Contractor is to ensure that tubing installed in chases is securely nailed and covered by a layer of 5:1 mixture of coarse sand and cement, finished flush with brickwork and that switch and plug boxes finish flush with the finished wall surface.

The Contractor is to ensue that below distribution boards connected by means of under-ground cables, a 230 mm wide by 115 mm deep cavity in the wall from the cable pipe to the distribution board is to be provided by the Contractor, or alternatively, cable sleeves as specified.

3. PLUGGING OF WALLS

Only approved plastic plugs shall be used to secure conduit or equipment up to 5kg mass. The use of round-headed screws only will be permitted.

Heavier equipment shall be secured by means of approved expansion bolts.

Wood plugs and any plugs in the joints in brick walls are not permitted.

4. FIXING TO CONCRETE CEILINGS

Ceilings mounted equipment other than luminaires shall be secured to concrete ceilings by means of expansion bolts, shot bolts or “Robot” tools bolts or as expressly specified for the service.

5. WIRING

5.1 PVC Insulated Single Core Medium Voltage Conductor

The conductor is to be of high conductivity copper wire insulated with Polyvinyl Chloride. The cable shall be finished in the required colours and shall be in accordance with SABS 1507 and 1574.

Circuit wiring shall be of the Loop-in system and no wiring joints in the conduit or conduit fittings will be permitted. Not more than two conductors of a kind will be allowed at any outlet point. the end strands of cables, whether single or looped which have to be connected to terminals of switched, plugs, lamp-holders, fittings and distribution boards, etc, are to be tightly twisted together. Cutting away of wire strands of any cable will not be allowed. Only one circuit in any one conduit will be permitted unless otherwise specified.

Conductor sizes shall be as follows except where otherwise specified:

Lighting circuits	1,5 mm^2	
Bells circuits	1,5 mm^2	
Clock circuits	1,5 mm^2	
Incinerator circuits	2,5 mm^2	
Ironing circuits	2,5 mm^2	with 2,5 mm^2 insulated earth wire
Plug circuits	4,0 mm^2	with 2,5 mm^2 insulated earth wire
Geyser circuits	4,0 mm^2	with 2,5 mm^2 insulated earth wire
Heater circuits	4,0 mm^2	with 2,5 mm^2 insulated earth wire
Stove	10 mm^2	with 6,0 mm^2 insulated earth wire
Motor circuits		
Up to 4kW single phase	4,0 mm^2	with 2,5 mm^2 insulated earth wire
Up to 11kW three phase	4,0 mm^2	with 2,5 mm^2 insulated earth wire

To avoid deformation of PVC insulated cables at temperatures in excess of 57° C, they shall not be brought directly on to the terminals of appliances such as electric heaters, or any other electrical appliances or apparatus (including luminaires) which have a temperature in excess of 57° C. They shall terminate in a suitable terminal box as near to the appliance or fittings as possible and connect up from thereon, with heat resistant conductor.

6. MOUNTING AND POSITIONING OF LUMINAIRES

Luminaires and installation to comply with SABS 1464 Parts 1 to 22 and IEC 598-1 and IEC 60598 as applicable.

The contractor shall, in the case of board and acoustic tile ceilings (i.e. as opposed to concrete slabs), ensure that the luminaires are symmetrically positioned with regard to the ceiling pattern.

The layout of the luminaires as indicated on the drawings shall be adhered to as far as possible. The exact positions must be confirmed on site with the Head : Works.

Except where otherwise specified, pendant luminaires are to be mounted with the bottom of the fittings 2,5 m above finished floor level, mounted on either metal discs or wood blocks.

Under no circumstances shall cover strips be cut to accommodate wood blocks. Wood blocks must be neatly slotted to fit over cover strips and are to be secured by a minimum of two screws, which shall penetrate at least 25 mm into solid

wood. Ceiling cover strips shall be neatly cut to accommodate fluorescent luminaires.

Where ceilings are raked, all incandescent luminaires are to be mounted on shaped leveling wood blocks securely fixed to the ceiling. Batten holders shall be secured to woodblocks by suitable brass screws. Fluorescent luminaires are to be mounted direct on raked ceiling without leveling blocks.

Fluorescent luminaires to be mounted on concrete ceilings shall be screwed to the outlet boxes and additionally supported by means of 50 x 6 mm expansion bolts. The bolts are to be ¾ of the length of luminaires apart.

Where a number of luminaires are installed end to end, outlet points must be provided after every second luminaire unless otherwise indicated on the drawing.

The luminaires are to be joined together by means of 20 mm conduit nipples, lock nuts and male brass bushes, and the wiring led through the channels of the luminaires. The Contractor shall ensure that all such rows are correctly lined up and that the rows are parallel with the relevant building line.

The luminaires are to be jointed together by means of 20 mm conduit nipples, lock nuts and male brass bushes, and the wiring led through the channels of the luminaires. The Contractor shall ensure that all such rows are correctly lined up and that the rows are parallel with the relevant building line.

Incandescent luminaires are to be screwed directly to outlet boxes in concrete slabs and in board ceilings. In board ceilings the conduit box and the conduit shall be secured to the timberwork of the ceiling in such a manner that it shall support any incandescent luminaire, which is designed to be fixed to a normal conduit box.

Fluorescent luminaires shall be secured to board ceilings by means of the conduit box and 6 mm bolts passing through the boards and brandering.

7. BATTEN HOLDERS

B.C. batten holders shall be of brass or moulded plastic reinforced type complete with shade ring. The batten holders shall comply with SABS IEC 60238 and SABS IEC 61184. All lamp holders are to have brass terminals with screw type connection.

8. LAMP HOLDERS

Edison screw lamp holders	:	SABS IEC 60238
Bayonet lamp holders	:	SABS IEC 61184
Lamp holders for tubular fluorescent lamps	:	SABS IEC 60400

B.C. screwed lamp holders shall be of brass 20 mm E.T. complete with shade ring and shall comply with SABS IEC 60238 and SABS IEC 61184 with screw type connection terminals.

9. SWITCHES AND SOCKET OUTLETS

Switches SABS IEC 60669 as applicable and socket outlets SABS IEC 60884 as applicable shall be of the most modern manufacture and bear the SABS mark.

Flush switch and plug cover plates shall, unless otherwise specified, be of anodized aluminium of thickness not less than 0,9 mm, satin or other approved finish as directed and otherwise to be fully in accordance with SABS IEC 1084 for cover plates and SABS 1085 for wall boxes.

10. POSITIONS OF SWITCHES AND SOCKET OUTLETS

Except where otherwise specified, lighting switches and socket outlets are to be installed 1,4 m above finished floor level.

All mounting heights specified are to be measured from finished floor level to the bottom of the outlet box.

Where the lower portion of the wall consists of face brickwork and the upper portion of plastered finish, switches and socket outlets are to be mounted in the plastered surface, provided that the lower edge of the plasterwork does not exceed a height of 1,5 m above finished floor level in which case the switches or socket outlets are to be installed in the face brick dado.

Where socket outlet and switch boxes have been installed with fixing lugs below finished wall surface, only approved distance pieces required to compensate for the recess shall be used. The lengths of distance pieces are not to exceed 15 mm.

Unless otherwise approved, light switches adjacent to doors are to be installed at the lock side of the door. Where the lock position is not indicated on the drawings, its position shall be ascertained before the switch box is installed. Switches are to be installed 150 mm from the reveal, or centrally if there is a fitting near the door.

All switch and socket outlet boxes shall be installed plumb, and built into the wall with a 1:1 mixture of cement and sand.

Industrial type switches and socket outlets shall be neatly recessed into the surface of plastered walls to avoid sets or alternatively spacer bar saddles may be used.

Deep type boxes may be used where switches or socket outlets are back to back, but where one side only is to be utilized at the time and the other is for future use, the side for future use shall be suitably covered with a metal cover plate.

11. LOW TENSION SWITCHBOARDS

Low Voltage switch gear and control gear to comply with SABS 1473 and SABS IEC 60947 and SABS 60349.

Where switchboards are to be installed in switch rooms or switch cupboards, the Contractor must ensure that the boards are manufactured to suit the dimensions of the rooms or cupboards.

Low tension switchboards shall be specified in detail for each service, but shall generally conform to the following:

They are to be of strong and rigid construction, with suitable angle, channel or folded steel framework. They are to be flush fronted and totally enclosed with sheet steel panels suitably formed at the edges and reinforced to prevent distortion. Unless otherwise directed, all front panels must be at least 2 mm thick and all other panels at least 1.6 mm thick. Panels are to be secured to the framework with studs and chromium plated dome nuts (self-tapping and similar screws are not permitted).

Switches, etc, are to be mounted on metal frames within the boards to give flush front panels. Equipment of normally surface mounted types such as energy meters, time switches and contractors, are to be mounted on inner metal trays behind hinged front panels. In the case of supply authority meters the hinged front panels must have transparent inserts.

All metal work of the boards must be thoroughly degreased, primed with PA 10 self etching primer and finished with one coat of undercoat and two coats of electrical orange high gloss enamel, unless otherwise specified.

All accessible current carrying parts, bus-bars, connecting strips, collector bars, etc, are to be adequately insulated in phase colours and suitably braced to withstand projected fault currents.

Connecting strips and collector bars must be of sufficient cross sectional area to carry full rated current of the switches served, irrespective of the fuse of trip rating.

The complete distribution board including bus-bars must be suitably constructed to withstand fault currents specified.

Connections to bus-bars are to be made by means of lugs suitably bolted and locked with high tensile bolts and connections to lugs must be effected by means of a crimping tools.

Incoming and outgoing bus-bar studs, where required, must be suitably insulated where they pass through panels of the board, and firmly supported within the board.

Where applicable, incoming and outgoing collector bars for cables in parallel must so arrange that the multiple cable ends can be connected to the bars with reasonably short tails which do not have to cross.
Cable supports must be placed at suitable heights having regard to the bending radius of the cables concerned and convenience in making off.

Wall-mounting and floor-standing back to wall type boards must be provided with full easy access to all equipment and wiring without any necessity of disconnecting or removing of any of the equipment mounted in the board.

Clear visible indication of all switch positions must be provided and the switches must be clearly labeled as directed by the Head : Works.

The details of construction proposed, and the Head : Works must approve all equipment of switchboards: Works before manufacture is commenced.

12. DISTRIBUTION BOARDS

12.1 Approval

The Head : Works must approve the details of construction proposed and all equipment within distribution boards: Works before manufacture is commenced.

12.2 Flush Mounting Distribution Boards

These shall be generally manufactured in accordance with SABS 1765. The board shall consist of two panels fitted side by side with common bonding tray and attached to a common architrave. One panel shall accommodate all single phase MCB's and the second panel shall accommodate the main isolator, main bus-bars and the triple pole MCB's. Chassis shall be of rigid channel section rust proofed steel with clip-on trays for the single pole MCB's. The main isolator is to be mounted at the bottom of the second panel with the triple pole circuit breakers above.

12.3 Surface Mounting Distribution Boards

These shall be generally manufactured in accordance with SABS 1765, with two panels as for flush boards.

12.4 Single Phase Distribution Boards

Single Phased boards shall be generally constructed as three phase boards except they shall have a single panel. Single phase boards shall be mounted with the bottom of the architrave 1,5 m above finished floor level unless specifically directed otherwise.

12.5 Distribution Board – In Roof Spaces

Where distribution boards are installed below a roof space, a minimum of 2 x 20 mm and 1 x 25 mm spare conduits are to be run from the distribution board into the roof space.

13. METER BOXES

The meter box shall be mounted with the top 1,7 m above finished ground level. Surface mounted meter boxes shall be secured by at least 4 x 10 mm expansion bolts.

Service cables entering the meter box shall be protected by means of a suitably sized galvanised pipe extended 450 mm below the ground surface and securely saddled to the wall and bonded to the meter box.

14. CONNECTIONS TO OUTLETS

14.1 General

Where connectors are used to connect to the wiring of luminaires and other appliances, the connectors shall comply with SABS Specification 1239.

14.2 Connection to Stoves

14.2.1 **General**

The connection to an electric stove, unless otherwise specified shall consist of 2 x 10 mm² conductors and a 6 mm² insulated earth wire in 25 mm conduit. The stove shall be controlled by a 60 Amp micro gap switch of approved make and the connection shall be by means of a 45 Amp 3 pin stove plug of the "Cape Town" type. Cable ends, which are to be connected to the stove, shall be equipment with suitable soldered or crimped lugs. The connection between the stove plug and stove shall be by means of flexible conduit.

Except for high school domestic science unit kitchens (see Clause 14.2.2), the conduit shall be chased into the wall and fitted with a switchbox for housing the micro gap switch and a 25 mm circular conduit box over which the stove plug will be mounted. The stove plug shall be fitted with an adaptor plate and shall be screwed directly to the conduit box by means of round head metal screws. The plug outlet shall face downward.

The stove plug and switch shall be mounted 430 mm and 1,4 m respectively above finished floor level unless otherwise specified or indicated on the drawings.

14.2.2 **Stove Connections in High School Domestic Science Unit Kitchens**

Connections to stoves in High School Domestic Science Unit Kitchens, where the stoves are situated in front of a fitting, shall be generally as specified in Clause 14.2.1 except that the 25 mm diameter conduit shall be run in the floor slab, from the distribution board to a position to the right of the stove. A pedestal, which is complete with a 45 Amp 3 pin "Cape Town" type cooker plug, mounted on the back, shall be fitted over the conduit and securely bolted to the floor by means of expansion bolts. The plug circuit, which passes through the pedestal, is to be on a separate circuit.

14.3 **Connections to Hot-water Cylinders**

The connections to hot-water cylinders not exceeding 3kW loading shall consist of 2 x 4 mm² PVC conductors and 1 x 2,5 mm² earth wire in a 20 mm diameter conduit from the distribution board. The conduits shall be chased in the wall and shall terminate at the side of the cylinder in a box over which is to be mounted a double pole isolator with pilot light.

The final connection between the isolator and cylinder shall be by means of silicone heat resistant conductors in 20 mm diameter flexible conduit.

Connections to roof mounted hot-water cylinders shall generally be as specified above with an isolator with pilot light mounted adjacent.

14.4 **Connections to Power Points**

Connections to electric motors and fixed apparatus to vibration shall, unless otherwise specified or indicated on the drawings, have final connections consisting of conduit and flexible tubing or reinforced hose in accordance with Clause 1.3 of this specification and PVC cables and earth wire of the required size.

An isolator shall protect all fixed apparatus and where necessary a starter fitted with a no-volt coil and overload protection adjacent to such apparatus.

Power points for connection of fixed apparatus to be installed by others, shall terminate in an approved type wall mounted switch unless otherwise specified.

The minimum conductor size for all power points shall be 4 mm^2 unless otherwise specified.

14.5 Underground Service Connection

This clause refers to underground service connections not provided by the Supply Authority.

The service cable and earth wire to be connected at the supply point in accordance with Clause 15.8 of this specification, and unless otherwise specified, shall be aid 600 mm below ground level throughout and otherwise fully in accordance with Clause 15 and all applicable sub-clauses thereof. Cable entries to meter boxes shall be in accordance with Clause 13 and other entries shall be by pipe or duct as directed.

14.6 Connections to Outbuildings

Connections to outbuildings shall be made by means of underground cable only, laid in accordance with Clause 15 and all applicable sub-clauses.

Where the cable is run from the roof space of the main building, it shall be enclosed in suitably sized galvanised pipe built into the wall or run surface as directed. Surface run pipes shall be securely saddled at 1,8 m centers. Where the cable connects to the conduit in the roof space, a suitable joint box shall be provided or alternatively the cable may be taken through the roof space, a suitable joint box shall be provided or alternatively the cable may be taken through the roof space with fixings at regular intervals, and down to the main board. At the outbuildings, the cable shall be enclosed in a suitably sized galvanised sleeve pipe built into the wall or run surface and terminated in the distribution board tray.

14.7 Connection and Mounting of Cable Fed Street/Site Lighting

Street/site lights shall in all cases, except where otherwise specified, be fed by underground cable. Unless otherwise directed, a suitable terminal board shall be provided in the base of the lighting pole for the connection of the incoming and outgoing cables, the feeds from the terminal board to the fitting shall be as specified.

"Surfix" cable and compression glands shall be installed between terminal board and cross arm/bracket mounted luminaires. The terminal board shall also accommodate a miniature circuit-breaker in the phase connection to the fitting. Poles intended for mounting directly in ground are to be provided with a 300 x 300 mm base plate.

15. UNDERGROUND CABLES

1000 volt PVC SWA and 110 Volt PILCA cable and accessories shall be in accordance with the relevant SABS specifications to SABS 1507.

The storage, transportation, handling and laying of underground cables shall be according to the manufacturer's requirements and the Contractor shall have adequate and suitable equipment and labour to ensure that no damage is done to cables during such operation. All cable pipes and ducts entering buildings are to be sealed against the ingress of vermin, water, etc.

15.1 Trenching

Cables, unless otherwise specifically directed, shall be laid at a depth of 600 mm below ground level. Trenches shall not be less than 300 mm wide for one to three cables, and the width shall be increased where more than three cables are to be laid together so that the cables may be placed at least 75 mm throughout the run.

The Contractor shall take all necessary precautions to prevent trenching work being in any way a hazard to the public and to safeguard all structures, roads, sewer works, or other property from risk of subsidence and damage.

15.2 Cable Joints

Joints in underground cable runs will not be permitted unless unavoidable and at the discretion of the Head : Works. Where cable joints are unavoidable, the cable jointer is to work efficiently and cleanly and so that each end of the cables to be joined may have a minimum of 0,9 m of slack disposed in a loop without stress. Back-filling under joints must be firmly tamped to prevent any subsequent settling.

15.3 Bedding

In trenches made in intermediate, hard rock, or boulder material, the cables shall be laid on a 75 mm thick bed of earth and be covered with a 150 mm layer of earth before the trench is filled in. The Contractor to supply all earth required for trench filling.

15.4 Laying

Cables shall be removed from the cable drum in such a way that no twisting, tension or mechanical damage is caused, and must be adequately supported at short intervals during the whole operation. Particular care must be exercised where it is necessary to draw cables through pipes and ducts, to avoid abrasion, elongation or distortion of any kind. The ends of such pipes and ducts shall be sealed to approval after the drawing in of the cables.

15.5 Back Filling

Back filling after bedding (see Clause 15.3) is to be carried out with a proper grading of the material to ensure settling without voids, and the material is to be tamped down after the addition of every 150 mm. The surface is to be made good a required.

Back filling of cable trenches must not be commenced until after the cable trenches and laid cable(s) have been inspected by the Head : Works. Where a Contractor fails to observe this requirement he may, at the discretion of the Head : Works, be required to re-open such cable trenches for inspection at his own expense.

15.6 **Protection of Cables**

Where so directed by the Head : Works, concrete or other warning covers shall be placed over cables above the top bedding layer. Cable pipes when directed are to be installed at road and other crossings.

15.7 **Marking of Cables**

Cable marking tape is to be supplied by the Contractor and is to be laid 150 mm below ground over a cable run and as may be directed by the Head : Works to give early indication of underground cable runs.

15.8 **Joints and Termination of Cables**

Joints in underground cables and terminations shall be made by means of "Scotch Cast" or other approved epoxy-resin pressure type jointing kits. Low tension PVC cables are to be made off with sealing glands and materials designed for this purpose, which must be of approved make.

15.9 **Sealing of Paper Insulated Cable Ends**

Where cables are cut and not immediately made off, the ends must be sealed without delay. If cables are cut and the ends not immediately made off or sealed, the cable may be rejected and the Contractor will be required to replace it at his own expense.

15.10 **Earth Wires**

Except where specifically directed otherwise, earth continuity conductors are to be run with all underground cables constituting part of a low tension distribution system. Such earth continuity conductors shall be bare copper wire of a cross sectional area in accordance with the Code of Practice 0142 but shall not be less than 4 mm^2 nor more than 70 mm^2. The earth continuity conductor is to be bonded to the cable armouring, and to the lead sheath if any, at each termination, as well as to the local earth bard. The earth wire must be secured to the cable at 1,8 m centers.

15.11 **Opening Up of Existing Cables**

Where it is necessary to expose existing buried cables for any purpose, or to excavate in the vicinity of existing buried cables, pipes, etc, every care is to be exercised and only labourers experienced in such work, and duly warned by the Contractor, shall be employed thereon.

15.12 **Definitions for Classifying of Excavation**

(a) Soft Excavation – shall be excavation in material that can be efficiently removed by a back-acting excavator of flywheel power approximately 0,10kW per millimeter of tinned-bucket width, without the assistance of

pneumatic tools such as paving breakers, or that can be efficiently loaded without prior ripping or stockpiling by a rubber tyred front-end loader approximately 15T mass and a flywheel power of approximately 100kW.

(b) Intermediate Excavation – shall be excavation in material that requires a back-acting excavator of flywheel power exceeding 0,10kW per millimeter of tinned-bucket width and the assistance of pneumatic tools prior to removal by equipment equivalent to that specified in (a) above.

(c) Hard Rock Excavation – shall be excavation in material that cannot be efficiently removed without blasting or without wedging and splitting prior to removal.

(d) Class A Boulder Excavation – shall be excavation in materials containing more than 40% by volume of boulders of sizes between 0,03 cubic meter and 20 cubic meter in a matrix of softer material or smaller boulders.

Note: (1) Excavation of solid boulders or lumps of size exceeding 20 cubic meter will be classified as hard rock excavation.

(2) Excavation of fissured or fractured rock will not be classed as boulder excavation but as hard rock intermediate excavation according to the nature of the material.

(e) Class B Boulder Excavation – shall be excavation of boulders only in a material containing 40% or less by volume of boulders of size between 0,03 cubic meter and 20 cubic meter in a matrix of softer material or smaller boulders.

Note: Those boulders that required individual drilling and blasting in order to be loaded by a back-acting excavator as specified in (a) above, or by a track type front-end loader, will each be separately classed as Class B Boulder Excavation.

16. EARTHING

16.1 Main Earthing

The type of main earthing shall be as required by the Supply Authority, if other than the Head : Works and in any case as directed by the Head : Works who may require additional earthing to meet test standards.

Where required, an earth mat is to be provided, the minimum size, unless otherwise specified, being constructed from copper straps 950 x 25 x 3 mm at 230 mm centers and braced at all intersections. Alternatively or additionally earth rods or trench earths may be required, as the Head : Works may direct, and installed according to his instructions.

All earth electrodes and connections thereto must be approved "in-situ" by the Head : Works before back-filling.

The electrical installation shall not be earthed by means of the lightning arrester earth electrode, if such is included in the installation, but may be bonded thereto.

16.2 **Earthing in Installations**

The installation shall be effectively earthed in accordance with the relevant sections of the Code of Practice 0142 and the requirements of the Supply Authority.

All hot and cold water and waste pipes are to be effectively bonded by means of 12 x 1,5 mm solid copper tape (perforated tape or wire will not be permitted), clamped by means of brass bolts and nuts. Bonding tapes exceeding 75 mm in length must be fixed to the wall by means of No. 6 x 20 mm brass screws and plastic plugs not exceeding 150 mm centers. Main earth copper tapes where installed less than 2,5 m from ground level, must be run in 20 mm diameter conduit securely saddled to the wall.

Gutters and down pipes are to be bonded by means of 6 mm round headed brass bolts, with nuts and washers. Self-tapping screws are not permitted.

Connections from the earth bar or terminal on the main board must be made to a visible cold water main, the incoming service conductor, if any, and the earth mat or plate (where such is required) by means of either 12 x 1,5 mm solid copper tape or bare 25 mm^2 copper wire, or such larger conductor as the Head : Works may direct. From each distribution board separate earth conductors are to be taken to the main earth bar or terminal on the main board. Each conductor shall consist to stranded copper conductors drawn into the conduit together with the distribution board feeders. The size of the earth conductors to be in accordance with the requirements of the Code of Practice 0142 or as specified.

Earthing clips shall be made of not less than 0,9 mm thick copper strips not less than 12 mm wide. They are to be complete with 25 x 7,7 mm brass bolts, washers and nuts and must be constructed so that the clips will fit firmly to the conduit without any additional packing.

Adjustable earth clips are not permitted.

17. **EXISTING BUILDINGS**

17.1 **Occupied Buildings**

Where work is to be carried out in occupied buildings the Contractor must arrange to carry out the installation with as little interruption to services and discomfort to the occupants as possible.

17.2 **Temporary Connections**

Temporary connections shall be provided where necessary for continuity of services, and as directed by the Head : Works. The contractor must ensure that such connections are both electrically safe and free from physical hazard.

17.3 **Old Materials**

Unless otherwise specified all existing materials removed by the Contractor shall remain the property of the Head : Works and are to be handed to the Head : Works.

17.4 **Making Good**

Any damage which may be done to the plaster work, floors, ceilings, wood and paint work, furniture and other equipment in the building, etc, during the progress of the electrical installation shall be repaired and made good by the Contractor to the satisfaction of the Head : Works.

18. **COMPLETION**

18.1 **Balancing of Load**

The Contractor is required to balance the load as equally as possible over multi-phase supplies.

18.2 **Tests**

The installation shall be tested by the Contractor as the service progresses or as required by the Head : Works and upon completion, for earth continuity and insulation. The final test before the taking over of the installation shall be made in the presence of the Head : Works.

The mandatory "Certificate of Compliance" shall be issued by the Contractor to the Supply Authority, with a copy to the Head : Works prior to first delivery being taken.

18.3 **Labelling**

All circuits and apparatus on switchboards shall be suitably correctly labeled by means of engraved plastic labels (white lettering on black), which are to be either bolted or screwed to the equipment panel, or fitted in channeling provided below the switch gear.

Sub-circuits are to be numbered and a legend detailing the circuits is to be framed and fitted to the door of the distribution board.

All other equipment is to be individually labeled to indicate the function.

All switchboards are to be fitted with a label on which the designation of the board is clearly indicated.

A separate engraved label depicting the origin and cable/conductor size shall be fixed below the main switch.

18.4 **Finishes**

Covers for all boxes, expansion boxes, etc, shall be finished to match the paint work of the ceiling or wall surface or as specified.

18.5 **Site Drawing**

On all completed new work or where specifically called for in the Tender Document, the Contractor shall, on completion of the works, submit to the Head : Works, a marked up site plan indicating the exact underground cable reticulation.

19. POWER DUCTING FOR SCHOOL SCIENCE LABORATORIES

The ducting shall be "Ductline 3" supplied by Messrs. Lascon Lighting, 102 Malbourne Road, P.O. Box 2479, Durban 4000: Telephone 031-2075081 or other approved.

20. SPEAKER AND MICROPHONE OUTLETS

Speaker and microphone outlets are to conform to the following details:

1. Speaker outlet – To have one flat and one round pin.

2. Microphone outlet – To have one round pin only.

Both female and male parts to be supplied and installed by the Contractor.

21. BELLS AND BUZZERS

21.1 Bells

Bells for schools and hostels shall be 220 Volt AC or 24 Volt DC as specified for the service. They are to be of robust construction encased in a sturdy cast metal weather-proof case. They are to operate on the frequency of the supply. They shall have an adjustable stabilizing spring, gold-silver contact points and 150 mm gongs.

21.2 Doorbells, Buzzers and Bell Transformers

These will be as specified for each service.

21.3 Bell Pushes

Except where otherwise specified, bell pushes shall be of the flush type suitable for mounting in a standard 100 x 50 mm box. They shall be clearly marked as a bell push and shall be fitted with satin finished anodized aluminium cover plates.

22. SIGNAL TIMERS

22.1 Primary Schools

The timer shall be designed to automatically signal the start and finish of school periods by the switching of a bell circuit and is to comply with the following specification:

1. The mechanism may be synchronous motor or quartz movement driven with a 24 hour dial or digital time read-out suitable for operation on a 220V 50Hz supply and is to be provided with a spring or battery reserve of a least 24 (twenty four) hours.

2. The unit is preferably to have minute to minute timing for a 24 (twenty four) hour period although 5 (five) minute intervals are acceptable, and is to be provided with Weekend lockout. Signal periods shall be adjustable from 5 – 45 seconds.

3. The unit shall be housed in a metal or plastic case with detachable front cover suitable for wall mounting.

4. Timers with punch tape programming are not acceptable.

22.2 **High Schools and Colleges**

Timers for these institutions shall generally be as for Primary Schools but are to have at least 3 (three) separate programmes and be fitted with three push buttons for independent manual operations for testing of each programme, plus an on/off switch for each programme, which does not affect the running of the clock.

23. **CLOCKS**

Electric clocks shall be of the quartz electronic battery operated type, with a dial of 250 mm diameter. The dial shall be white, with distinctive minute markings and chapters shall be black Arabic figures. Time adjustment shall be simple. Where mains operated electronic clocks are specified, these shall be of the synchronous self starting type, suitable for a 200 – 250 V 50 Hz AC supply

24. **TIME SWITCHES**

The time switch shall consist of a single pole switch with silver to silver or other approved contacts operated by a quartz movement with a 24 hour reserve.

A suitable 24 hour, night and day dial, with hour indicator and two adjustable strikers, one OFF and one ON must be provided. The whole mechanism is to be totally enclosed in a dust proof case.

The current rating shall be required and the switch is to be suitable for operation on 220 volt 50 Hertz AC supply. Time switches used for under floor heating are to be fitted with weekend cut-out.

25. **MOULDED CASE CIRCUIT BREAKERS (INCLUDING MINIATURE)**

Circuit breakers shall be of the size and type as directed and specified for the service. They shall comply with SABS Specification 156 and SABS IEC 60947-2.

26. **SWITCHES: ON-LOAD FAULT MAKING (CIRCUIT BREAKER TYPE) WITHOUT TRIPS**

The switches shall be triple pole, hand operated, panel mounting air break type, having continuous current rating as specified and suitable for operation of 380 – 440 Volt 50 Hz AC system.

The contacts are to be of silver alloy and the switch mechanism shall be of the quick-make, quick-break type.

27. **SWITCHBOARD EQUIPMENT**

Switchboard equipment such as switches, circuit breakers, etc, shall be as directed and specified in the detail specification for the service.

Circuit breaker equipment of SABS IEC 60934.

28. FUSE-SWITCH UNITS (WITH HRC FUSES)

The fuse-switch unit is to be of the double pole, or triple pole or triple pole with neutral link type, and of the required current rating, as specified for the service and must be in accordance with BS EN 60947-3.

The fuse links must be fully isolated when the switch is in the open position, and interlocks must be provided to prevent the switch being operated with the cover open.

The fuse links shall comply with SABS Specification 172 and SABS IEC 60269-1 to 4.

29. BUS-BAR COPPER

Bus-bar copper must be fully in accordance with Tables A1 and A2 of SABS 1473-2 and SABS IEC 60439-2.

30. SPECIFICATION COMPLIANCE

The complete installation shall comply with the requirements of this specification. Should any differences or contradictions exist between this Specification and the detailed requirements for a specific installation, then the detailed requirements shall take precedence.

ANNEXURE 3

LIGHTNING PROTECTION INSTALLATION

GENERAL SPECIFICATION

1. SATISFACTORY INSTALLATION

The whole of the installation shall be carried out in accordance with:

(a) The latest S.A.B.S. Code of Practice for the Protection of Structures against Lightning - S.A.B.S. 03 ; SABS IEC 61024 (1) , 61024 (1 -1); SABS IEC 61312 (1) ; SABS IEC 61662 & NRS 042.

(b) The KwaZulu-Natal Department of Works General Electrical Specification.

(c) The Municipal By-Laws and any other special requirements as deemed necessary by the Local Supply Authority;

(d) Local Fire Regulations.

2. S.A.B.S. APPROVED DRAWINGS

SABS Approved drawings are not required for this project.

3. TEST ON COMPLETION

Upon completion of the lightning protection system, the following tests shall be witnessed by an appointed representative of the Employer. The results shall be recorded on suitable test certificates which must be signed by both the Contractor and the Employers representative. A sketch must be included on each test certificate indicating the positions of each earth electrode in relation to some permanent reference point. It must also indicate the positions at which tests were carried out, the type of test and the results of these tests.

3.1 Earth Resistance Test

The Earth Resistance Test shall involve measuring the resistance to earth of each rod-type electrode, or group of rod-type electrodes, or trench earth which would normally be connected to one down-conductor or earth terminal. This test must be made with the electrodes completely disconnected from any part of the structure or lightning protection system.

3.2 Electrical Continuity Tests

(a) **External Down-Conductors**

Electrical continuity between the lower ends of external down-conductors which must all be disconnected from the earthing system during the test shall not exceed 1 (one) ohm.

(b) Metallic Services

Electrical continuity between any metallic structures of services (e.g. rainwater pipes) which form an integral part of the lightning protection system shall not exceed 1 (one) ohm. These tests should be carried out with all other components of the lightning protection system disconnected from the component being tested.

4. DESCRIPTION OF MATERIAL

4.1 Air Terminals and Down-conductors

All conductors must be in accordance with the requirements of BSS 1474 or American Standards Specification 6063. All aluminium conductors shall have a cross-section area of not less than 30 mm^2 (domestic dwelling only) or 50 mm^2 for all other applications. The dimensions of flat section conductors to be 20 mm x 3 mm. Where conductors are mounted in stand-off guides, the cross-section area of the conductor must be not less than 70 mm^2 to give adequate mechanical strength.

4.2 Conductor Guides

The conductor must be mounted in aluminium alloy guides conforming with the material specification given in 4.1 above. The guides must allow for free longitudinal movement of the conductor to cater for expansion and contraction of the system caused by temperature variation. The minimum thickness of any part of the guide shall not be less than 3 mm. The guides must be securely attached to the structure using two stainless steel screws and plugs, the use of plated screws is not permitted.

The conductor system shall be supported in guides so that an air gap exists at all times between the aluminium and the surface of the structure, the guides being seated upon plastic or other similar insulating material. Should conductors be installed directly upon the surface of concrete or cement plaster, an insulating strip is to be installed over its whole length to prevent contact between the two surfaces. Guides shall be installed to support the conductor at intervals not exceeding 1,2 metres horizontally or 1,5 metres vertically.

N.B.: No part of an aluminium conductor system must be allowed to come into direct contact with concrete or cement plaster as this may cause the aluminium to corrode.

4.3 Expansion Loops

Where conductors are installed horizontally without deviation from a straight line over long distances, expansion loops must be provided at distances not exceeding 30 metres. These expansion loops must have a cross-sectional area which is at least equal to that of the conductor.

4.4 Protection of Down-conductors

Where external down-conductors are installed in areas which are readily accessible to the public, the lower ends of the conductors shall be enclosed in a semi-rigid insulating material. In the case of a circular section conductor this shall comprise a 2 metre length of 20 mm diameter P.V.C. conduit. This conduit shall be securely attached to the wall by means of galvanized steel saddles fixed with stainless steel screws and plugs, spaced at intervals not exceeding 1 m. Where a flat section conductor is used this shall be covered by a similar length of 25 mm P.V.C. conduit. The lower end of the conduit shall be positioned as close as practicable to ground level, i.e. immediately above an aluminium to copper joint. The ends of the conduit shall not be sealed.

4.5 Earthing Electrodes

Earthing electrodes must consist of either copper-clad steel rods not less than 12 mm in diameter and having a minimum copper thickness of 0,20 mm driven into the ground, or a 50 mm^2 (35 mm^2 for domestic dwellings) bare copper conductor buried in a trench, or a combination thereof. Where copper clad steel electrodes are used they must have a suitable bond between the steel core and copper exterior to prevent moisture ingress between the two metals. Where it is necessary to extend earth rods, an electrolytically compatible corrosion resistant, coupling device, which prevents ingress or moisture into the joint shall be used. The copper conductor below the down-conductor joint shall be covered by a semi-rigid P.V.C. conduit for a distance of approximately 200 mm above ground and 400 mm below ground.

4.6 **Joints Above Ground**

Circular section aluminium conductors shall be jointed by aluminium ferrules or lugs which are securely crimped into place. Aluminium lugs must be bolted together using 10 mm diameter aluminium bolts and washers. The material specification for these components must conform with that laid down in paragraph 4.1. Alternatively heavily tinned copper lugs and ferrules may be used. The lugs should be joined together by means of 10 mm diameter copper, brass or bronze bolts and washers. Care should be taken to inhibit corrosion where dissimilar metals are used by thoroughly cleaning the surfaces of the metal before assembly and subsequently sealing the joint with an inert tenacious compound or tape.

Flat section aluminium conductors shall be joined by double riveting, using aluminium rivets which comply with the material specification laid down in 4.1. Alternatively 2 x 6 mm diameter stainless steel bolts, nuts and washers may be used. Fold over type bends will not be permitted.

Down-conductors are to be terminated approximately 200 mm above finished ground level. Circular section aluminium is to be jointed to a 50 mm^2 (35 mm^2 in the case of domestic dwellings) stranded copper conductor by securely crimping in place two heavily tinned lugs and bolting these together using 10 mm diameter copper, brass or bronze nuts, bolts and washers.

N.B. : Under no circumstances shall aluminium conductors be buried in the ground.

4.7 **Joints Below Ground**

A joint in the stranded copper conductor which forms part of the earthing system must be made by using a crimped copper ferrule clamping (not lugs) using two copper line taps of suitable dimensions, or exothermic welding. The copper earth conductor must be joined to an earth rod by either clamping, using a standard earth rod clamp or copper line tap or by exothermic welding. Joints which are made between dissimilar metals (i.e. copper conductor to galvanized steel water main), must be thoroughly cleaned before assembly. They shall be rendered watertight using waterproof adhesive tape on a suitable compound for a minimum distance of 200 mm in all directions from the joint.

4.8 **Bonds**

Where it is necessary to bond the aluminium conductor to any other metallic surface, this must be done by bolting or riveting. When attaching aluminium to a dissimilar metal the joints are to be thoroughly cleaned and sealed to prevent corrosion.

5. GENERAL INSTALLATION PROCEDURE

5.1 **Air Terminals for Non-metallic Pitched Roofs**

Aluminium conductors are to be installed along all ridges of roofs and projections such as dormer windows, etc., terminating at the ends with conductors running downwards over the surface of the roof and the eaves. Non-metallic chimneys must be protected by means of a finial of sufficient length to cover the chimney within a 45° angle struck downwards from its point. Alternatively it should have a conductor installed in the form of a closed loop upon the upper surface. The conductors are to follow the outer contour of the stack and must be bonded at a convenient point to the nearest component of the air terminal system.

N.B. : This bond may run in a horizontal or downward direction, but under no circumstances must any part of it run above horizontal.

Conductors may be dead-ended (i.e. have one end free and unbonded), providing that the length of such a conductor does not exceed 10 metres and that the unbonded end is either at the same level or higher than the bonded end. This technique may be used where ridge conductors are installed over dormer windows, etc.

In all cases where metallic gutters have been installed along the eaves of a pitched roof, these must be bonded to the air terminal system. Where metallic gutters do not exist, however, a conductor must be installed over the surface of the roof at eaves level to which the remainder of the air terminal system is to be bonded, with the following exceptions :

(a) Where the maximum distance from the ground level to the eaves of the building is less than 4 metres and the pitch of the roof is more than 1 in 2 (27° from the horizontal).

(b) Where the maximum distances from ground level to the eaves is less then 7 metres and the pitch of the roof is more than 1 in 1,5 (34° from the horizontal).

(c) Where the distance from the ground level to the eaves is more than 7 metres and the pitch of the roof is more than 1 in 1 (i.e. the included angle at the apex of the roof is less than 90°).

Under these circumstances eaves conductors need not be installed.

Any non-metallic objects which protrude above the general roof lines, such as Cape Dutch gable ends, must be protected as described above with a suitable air terminal system. Any metallic objects which protrude above the general roof line, such as hot water expansion pipes must be bonded as directly as possible to the nearest eaves conductor, gutter or other part of the lightning system.

N.B. : These bonding conductors must run in a horizontal or preferably a downward direction, from the vent pipe, etc., to the lightning protection system.

5.2 Air Terminals for Metallic Pitched Roofs

Buildings with roofs covered with electrically continuous metal sheets do not require separate air terminals but must be earthed via down conductors generally as described in 5.6 and 5.7. Any non-metallic objects projecting above the general roof line must be separately protected as described in 5.1 and bonded to the metal roof covering.

5.3 Air Terminals for Non-metallic flat or Mono-pitched Roofs

For flat or mono pitched roofs of non-metallic construction the air terminal system must consist of aluminium alloy conductors installed around the outer perimeter of each section of the roof structure. These conductors must be installed on top of parapet walls if these exist. Lift motor rooms, tank rooms, penthouses, etc., which protrude above the general roof line must have air terminal conductors installed around the outer perimeter of each roof slab or parapet wall. Any metallic objects which protrude above the roof line, such as expansion pipes, signs, flag poles, handrails, etc., must be bonded directly to the nearest component of the lightning protection system as described in 5.1.

N.B. : It is not permissible for the ends of conductors to be bonded directly to the perimeter air terminal system if the latter is installed upon a parapet wall having a height exceeding 500 mm above roof slab level. In these circumstances the conductors are to be bonded directly to the down conductors.

5.4 Air Terminals for Metallic flat or Mono Pitched Roofs

Metallic flat or mono pitched roofs do not require separate air terminal conductors, providing that there is electrical continuity between the metallic roofing sheets, (see 5.2). A metallic roof surrounded by a non-metallic parapet wall shall have conductors installed at the top of the parapet wall and these must be bonded to the metallic roof at intervals not exceeding 20 metres. If the parapet wall is clad with metal over its upper surface or a handrail is installed which affords good electrical continuity, separate air terminal conductors need not be installed. Under these circumstances the metal handrail or cladding must be bonded to the metal roof covering at intervals not exceeding 20 metres.

All non-metallic covering such as slates, tiles, asbestos cement sheeting, etc., supported by a steel structure being electrically continuous throughout may be treated as being of a complete metal construction. In these circumstances no separate air terminal system need be installed providing the steel roof structure is bonded to earth at intervals given in 5.5.

5.5 Down Conductors for Non-metallic Structures

Down conductors must be installed at regular intervals around structures and to run as directly as possible between the air terminal and earthing system. They must, where practicable, be positioned at the external corners of the structure. The maximum separating distance between down conductors around the perimeter of the structure must not exceed 30 metres. In the case of very tall buildings having a slender base (i.e. chimney stacks, water towers, etc.), a minimum of two down conductors must be installed.

The lower ends of down conductors are to be terminated and bonded to the earthing system approximately 200 mm above finished ground level. Under no circumstances must aluminium conductors be buried underground. Test joints must be provided between the down conductors and earthing system. Down conductors must run vertically between the air terminal and earthing systems. Where this is impracticable, their course may be deviated to run at any angle up to and including horizontal.

Where it is necessary to run conductors horizontally over the upper surface of a structural protrusion, such as an exposed concrete slab, the conductor may run down vertically over the edge of the slab and return to the main structure, so that the distance between the upper and lower conductors exceeds one third of the length of the horizontal run. Looped down conductors are not permitted. Down conductors must not run over the underside of large overhangs which are less than 6 metres above ground level, or other areas where people are likely to be present during a thunderstorm.

External or internal metallic rainwater pipes may be used as down conductors providing these are of substantial section and are jointed by screwing one length into another or welding. Thin gauge galvanized steel pipes whose sections are held together by friction, rivets or screws must not form part of a lightning protection system.

5.6 Down conductors for reinforced concrete framed structures

The steel reinforcement of this type of structure may be used in place of down conductors. Where the reinforcing system is used, the air terminal system must be bonded to it at a maximum of 30 metre intervals using steel clamps. This bond may be achieved by clamping, with a steel clamp, a steel conductor to a selected reinforcing bar, the opposite end of this conductor must terminate at a corrosion resistant metallic terminal such as Grade 316 stainless steel.

The reinforcing system of prefabricated concrete buildings must not be used unless special provision is made for bonding the various prefabricated sections together.

The terminals should be mounted flush with the face of the concrete. An aluminium alloy bond must then be taken from the air terminal system and be connected to the stainless steel terminal by means of a heavily tinned crimp lug for circular section aluminium, or a suitable bi-metallic joint in the case of flat section aluminium. A similar system must be used to bond the reinforcing system at ground level to the earthing system at points directly below the air terminal bonds. Here copper conductors must be used as the external bonding material.

Under no circumstances must copper, or other non-ferrous material be allowed to come into contact with steel reinforcing bars, as this may cause severe corrosion and subsequent structural damage. The lightning protection system must not be bonded to any part of the structure which is electrically isolated from the remainder of the building, i.e. cantilevered sections. In these circumstances, or where it is otherwise impracticable to use the reinforcing system, external down conductors must be installed as described in 5.5.

5.7 **Down conductors for steel framed structures**

Where the framework of a building is constructed of structural steel columns, these may be used in place of down conductors providing the separating distance between them does not exceed 30 metres. The upper ends of the columns must be bonded to the air terminal systems and the lower ends to the earthing system.

5.8 **Earthing by means of vertically installed rod type electrodes**

Rod-type electrodes must be driven into the ground at a position directly below each down connector. The maximum earthing resistance of each electrode or number of electrodes bonded to any one down conductor shall not exceed N X 30 ohms, where N equals the total number of down conductors which are bonded to a common air terminal system, or 200 ohms whichever is the lower value.

The minimum horizontal separating distance between rod-type electrodes bonded together must not be less than their installed depth. The upper ends of installed rod-type electrodes are to be terminated approximately 500 mm below finished surface level. A 50 mm^2 copper bonding conductor must be installed to run between each earthing electrode system and the lower ends of the adjacent down conductors. A joint is to be made between each of these bonding conductors and the down conductors at a position approximately 200 mm above finished ground level. These bonding conductors must be installed in P.V.C. conduit securely affixed to the wall (see 3.4). The length of this P.V.C. conduit must be approximately 600 mm and must be installed so that approximately 200 mm protrudes above ground level, the remainder being buried into the soil.

5.9 **Earthing by means of metallic water mains**

Where two or three down conductors are installed the water mains may serve as an earth terminal for one of these. Where three of more down conductors are installed the water mains may serve as an earth terminal for two of these. Regardless of whether the water mains are used as an earth terminal or not, the incoming metal water pipe must be bonded to the lightning protection earthing system underground.

5.10 **Earthing by means of trench type electrodes**

Where the soil conditions prevent the satisfactory installation of rod-type electrodes, a trench earth system must be installed. This method is to comprise a 50 mm^2 stranded copper conductor installed horizontally into a trench at a depth of 500 mm below finished ground level. The conductor is to follow the general outline of the structure to be protected and be installed 1 metre away from the outside walls. Where the building stands on rocky ground, the trench earth may be attached to the lower part of the wall in areas where rock protrudes through the soil. The conductor must, however, be buried wherever possible as described above.

Each down conductor must be bonded to the trench earth system as directly as possible by means of a copper conductor.

Trench earth systems must have a maximum earth resistance of 30 ohms. An isolated length of trench earth mat must be bonded to the down conductor system in such a way as to reduce the length of dead-ends to the minimum.

Should trench earths be installed beneath pathways where people are likely to be present during a thunderstorm, a plastic, bitumastic or ceramic pipe must be installed having a length similar to the width of the pathway and the trench earth conductor run inside it.

N.B. : The maximum useful length of a dead-ended trench earth is 80 metres.

ANNEXURE 4

PIETERMARITZBURG
DOPW - Head Office
Tender Box Location
191 Prince Alfred street
Pietermaritzburg
DOPW Southern Region-
Tender Box Location
10 Prince Alfred street
Pietermaritzburg
Church St
Burger St
West St
1st Ave
Scott St
Pine St
Park Dr
Balmoral Dr
Princess Elizabeth Dr
Princess Margaret Dr
College Rd
Bulwer St
Boshoff St
Aberfeldy Rd
Riverton Rd
Woodhouse Rd
Survey Rd
Alan Paton Ave
Leinster Rd
Mediclinic
Pietermaritzburg
R56
SCOTTSVILLE
N

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

Annexure 5

Joint Venture Agreement

(March 2004)

(First Edition of CIDB document 1017)

1. **PREAMBLE**

This agreement is made and entered into by and between

_____

_____

_____

of the first part and

_____

_____

_____

of the second part and

_____

_____

_____

of the third part.

(allow for additional parties as necessary).

Whereas the foregoing parties have resolved to form a Joint Venture under the title of

_____

_____

_____

for the exclusive purposes of securing and/or executing the Contract to be awarded by

(name of Employer)

to the KZN Department of Public Works in respect of the following project:

for *(brief description of Contract)*

KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS

Now it is hereby agreed as follows :

2. DEFINITIONS AND INTERPRETATION

2.1 Definitions

The following words and expressions shall have the meanings indicated, except where the context otherwise requires. Defined terms and words are, in general, signified in the text of the Agreement by the use of capital initial letters, but the absence of such letters does not necessarily signify that a term, or word, is not defined.

'Agreement' means the agreement between the Members of the Joint Venture and includes this model form of agreement together with the Preamble, Specific Provisions, if any, Schedules 'A', 'B' and 'C' and any relevant Documents prepared prior to the signing of the Agreement and appended thereto.

'Contract' means the contract with the Employer for the supply of the Deliverables, for the purposes of securing and executing which, the Joint Venture has been formed.

'Deliverables' means the works and/or services, equipment, materials, goods, etc. to be furnished by the Joint Venture to the Employer in terms of the Contract.

'Document' means any written, drawn, typed, printed, or photographic material, which relates to the Agreement

'Employer' means the person, or body, which is to award the Contract and will employ the Joint Venture if it is awarded the Contract.

'**Joint Venture'** means the joint venture formed by the Members in accordance with the Agreement

'Management Committee' means the body established in terms of the Agreement to manage all aspects of the work of the Joint Venture in securing and executing the Contract and in meeting the provisions for the Agreement.

'Member' means a person, or body which, being a party to the Agreement, is a member of the Joint Venture

'Member's Interest' means the proportion expressed as a percentage, which the total monetary value of all resources provided and contributions made by a Member towards the execution by the Joint Venture of the Contract bears to the total of such values by all Members and, unless otherwise indicated in the Agreement, represents the extent to which the Member participates in the fortunes of the Joint Venture.

'Representative' means the person representing a Member on the Management Committee

'Schedules' means Schedules 'A', 'B' and 'C' which set out general, financial and other information relating to the Members and the obligations, duties, rights, risks and benefits arising from their participation in the Joint Venture.

'Specific Provisions' means the variations, if any, required to this standard form of agreement for the specific purposes of the Agreement.

2.2 Interpretation

Unless inconsistent with the context, an expression in the Agreement which denotes:

- any gender shall include the other genders
- a natural person shall include a juristic person and vice versa
- the singular shall include the plural and vice versa

2.3 Headings

The headings to clauses of the Agreement shall not be considered part thereof, nor shall the words they contain be taken into account in the interpretation of any clause.

2.4 Law

The Agreement shall be construed in accordance with and governed by the laws of the Republic of South Africa and the English language versions shall prevail.

2.5 Language

English shall be exclusively used by the Members in the preparation of Documents unless otherwise indicated.

2.6 Conflict between Agreement and Contract

Should any provision of the Agreement be in conflict with the terms of the Contract, the Agreement shall be amended to the approval of the Management Committee so as to eliminate the conflict.

3. JOINT VENTURE GENERAL

3.1 Establishment and Purpose

The Joint Venture established by the Members in terms of the Agreement is an unincorporated association with the exclusive purposes of securing and executing the Contract for the benefit of the Members.

3.2 Termination

The operation of the Joint Venture and the validity of the Agreement shall terminate if and when it becomes evident that the Joint Venture will not be awarded the Contract, or, if the Joint Venture secures the Contract, when all obligations and rights of the Joint Venture and the Members in connection with the Contract and the Agreement have ceased and/or been satisfactorily discharged.

Unless otherwise decided by the Management Committee, the Agreement shall not terminate if a Member changes its name, or is taken over by, or merged with, another body.

This agreement will terminate when any one of the Members resigns, are liquidated or opts out of this agreement and the Joint Venture will be in breach of contract with the Employer and their contract could be cancelled.

3.3 Exclusivity

Unless otherwise agreed by the Management Committee, or provided for in the Contract no Member shall engage in any activity related to the Contract other than as a Member of the Joint Venture and Members shall ensure that their subsidiaries and other bodies over which they have control comply with this requirement.

3.4 Participation of Members

Except as may otherwise be stipulated in the Agreement, each Member shall be responsible for all costs incurred by it prior to the date of inception of the Agreement.

Subsequent to the date of inception of the Agreement, each Member shall, participate in the operations, risks, responsibilities and fortunes of the Joint Venture including, inter alia, the provision of funding, sureties, guarantees, insurances, human and other resources and participation in profits and losses to the extents indicated in the Schedules. Participation in any aspect not covered in the Schedules shall, if an agreement cannot be reached between the Members, be to the same extents as indicated by the Members Interests.

3.5 Management

The affairs of the Joint Venture shall be directed and controlled by the Management Committee, as set out in Section 4 hereof.

3.6 Confidentiality

All matters relating to the Agreement and the Contract shall be treated by the Members as confidential and no such matter shall be disclosed to any third party without the prior written approval of the Management Committee.

No Member shall be party to the dissemination of publicity relating to the Contract, or the Agreement, without the prior written approval of the Management Committee and the Employer.

3.7 Assignment

No Member shall cede, assign, or in any other way make over any of its rights, or obligations, under the Agreement without the prior written consent of the Management Committee.

3.8 Subcontracting

No Member shall subcontract any obligation, work or duty for which it is, itself, responsible in terms of the Agreement without the prior written consent of the Management Committee.

3.9 Variations to Agreement

No variation, modification, or waiver of any part of the Agreement shall be of any force, or effect, unless unanimously agreed by the Members and reduced to writing.

3.10 Liability

Each Member warrants that it will indemnify the other Members against all legal liabilities arising out of, or in connection with the performance of its obligations under the Agreement.

It is acknowledged by the Members that they may be held jointly and severally liable in respect of claims against the Joint Venture by the Employer or third parties.

4. MANAGEMENT OF JOINT VENTURE

4.1 General

The affairs of the Joint Venture shall be directed, controlled and managed by the Management Committee, which, within the terms of the Agreement and the Contract, shall have full authority to bind the Members in all matters relating to the affairs of the Joint Venture.

Communication between the Joint Venture and the Employer, or third parties, relating to the Contract shall be conducted exclusively by the Management Committee, or by such person as it may delegate to perform this function.

The Management Committee shall have the power to appoint a project manager and/or such other persons as it may see fit to appoint for the purpose of executing the Contract and may delegate such of its powers, responsibilities and duties as it may consider necessary, or desirable, to persons or bodies appointed or seconded for this purpose.

Such administrative functions as are necessary to ensure the effective operation of the Management Committee shall be performed by its chairman.

4.2 Management Committee

4.2.1 *Composition*

The Management Committee shall, unless otherwise agreed by all the Members, consist of one Representative of each Member and each Member shall be obliged, at all times, to maintain a Representative on the Management Committee.

Each member shall, not later than three working days after the signing of the Agreement, appoint its Representative and notify the other Members of the name and contact details of the Representative. Such Representative shall have the power to bind the Member that he represents in all matters relating to the execution of the Contract and the performance of the Agreement.

A Member shall be entitled, after giving the other Members not less than three working days written notice of his intention to do so, appoint, remove and/or replace, an alternate who shall, at any meeting of the Management Committee from which the Representative whom he represents is absent, be vested with all rights and powers and subjected to all the obligations of the absent Representative.

The chairman of the Management Committee shall be the Representative of the Member which has the largest Member's Interest. If two, or more, Members have the same, largest Member's Interest, the chairmanship shall rotate between the Representatives of such Members at three monthly intervals, the order of rotation to be determined by ballot.

Notwithstanding the foregoing, the chairmanship of the Management Committee may be determined, or changed, at any time by unanimous decision of the Management Committee.

No remuneration shall be paid by the Joint Venture to Representatives or their alternates for serving on the Management

4.2.2 *Meetings*

Meetings of the Management Committee shall take place at such times and places as the Management Committee may determine, provided that the chairman shall convene a meeting of the Management Committee to be held not later than ten working days after he has been requested, in writing, by a Member to do so. Not less than five working days written notice of any meeting of the Management Committee shall be given to all Representatives and their alternates.

The Management Committee may permit, or invite, persons other than Representatives or alternates to attend any of its meetings, but such persons shall not have voting rights.

4.2.3 *Decisions*

Each Representative shall have one vote on the Management Committee and where, in terms of this clause, a casting vote is required, this shall be exercised by the chairman.

All decisions of the Management Committee shall, desirably, be unanimous. Accordingly, if unanimity cannot, initially, be achieved in regard to a decision, the meeting at which that decision is sought shall be adjourned for a period of 48 hours to enable Representatives to consult with their principals. If, on resumption of the adjourned meeting, unanimity can still not be achieved, the decision, provided it is not one requiring unanimity of the Members, shall be taken by majority vote and, in the event of a tie, the chairman shall exercise a casting vote.

A Member not satisfied with a majority decision of the Management Committee may declare a dispute, to be dealt with in terms of Clause 8 hereof, but the majority decision shall, nevertheless, be implemented with immediate effect.

Decisions of the Management Committee, whether taken at a meeting, or otherwise, shall be recorded in written minutes, which shall be distributed by the chairman to reach the Representatives not later than five working days after those decisions were taken. Such minutes shall be deemed to have been affirmed by the Representatives unless written notice of dissent is received by the chairman not later than three working days after receipt of the minutes by the Representative.

4.2.4 Powers and duties

The functions, responsibilities and powers of the Management Committee shall include, inter alia, those listed below:

4.2.4.1 Formulating overall policy in regard to the achievement of the objectives of the Joint Venture.

4.2.4.2 Managing the day to day affairs of the Joint Venture.

4.2.4.3 Monitoring, directing and co-ordinating the activities of the Members to ensure that the objectives of the Joint Venture are achieved and that the obligations and responsibilities of the individual Members are met.

4.2.4.4 Monitoring and controlling the financial affairs of the Joint Venture and ensuring that proper books of account and financial records relating to affairs of the Joint Venture are maintained in an approved form and submitted to the Management Committee for approval at regular intervals, which shall not be longer than one month.

4.2.4.5 Determining the necessity for and the details of any changes in the duties and responsibilities of Members provided that any resulting changes in Members' Interests shall be unanimously approved by the Members.

4.2.4.6 Determining the terms and conditions of employment of personnel and the emoluments applicable to staff seconded to the Joint Venture by the Members.

4.2.4.7 Controlling and approving the appointment of all subcontractors.

4.2.4.8 Procuring, after the completion of the Contract and the release of all bonds, guarantees and sureties given in respect of the performances of the Joint Venture and the Members, the preparation and auditing of a final set of accounts, on the basis of which the final profits, or losses, attributable to the individual Members shall be determined and any necessary adjustments effected.

5 RESOURCES OF JOINT VENTURE

The resources to be utilised by the Joint Venture in securing and executing the Contract shall, insofar as these are to be provided directly by the Members, be as set out in the Schedules and may, from time to time, be amended by decision of the Management Committee, provided that the Member's Interests are not, except with the unanimous approval of the Members, affected thereby.

Similarly, specific areas of responsibility of the Members for the performance of work and the provision of facilities shall be as set out in the Schedules and may, from time to time, be amended by decision of the Management Committee, provided that the Members' Interest are not, except with the unanimous approval of the Members, affected thereby.

5.1 Schedule 'A' (General)

Schedule 'A' shall contain general information relating to the Joint Venture including, inter alia, the following :

1. The Employer's name and address.
2. A brief description of the Contract and the Deliverables.
3. The name, physical address, communications addresses and domicilium citandi et executandi of each Member and of the Joint Venture.
4. The Members' Interests.
5. A statement indicating whether, or not, Specific Provisions apply to the Agreement.
6. A schedule of insurance policies which must be taken out by the Joint Venture and by the individual Members.
7. A Schedule of sureties, indemnities and guarantees that must be furnished by the Joint Venture and by the individual Members.
8. Details of the persons, who, in the event of failure by the Members to reach agreement on the appointments of mediator and arbitrator, will nominate appointees to these positions in terms of Clauses 8.2 and 8.3.

5.2 Schedule 'B' (Financial)

Schedule 'B' shall contain information regarding the financial affairs of the Joint Venture including, inter alia, the following :

1. The working capital required by the Joint Venture and the extent to which and manner whereby this will be provided and/or guaranteed by the individual Members from time to time.
2. The banking accounts that are to be opened in the name of the Joint Venture and the manner in which these are to be operated.
3. The rates of interest that will be applicable to amounts by which Members are in debit, or credit, to the Joint Venture.
4. The names of the auditors and others, if any, who will provide auditing and accounting services to the Joint Venture.
5. The intervals at which interim financial accounts and forecasts will be prepared for approval by the Management Committee.
6. Insofar as not covered in Schedule 'C', the basis on which contributions of various types by the Members towards the work of the Joint Venture in securing, executing, managing and satisfactorily completing the Contract, will be valued.
7. The basis on which profits and/or surplus cash will, if available from time to time, be distributed to Members.
8. The basis upon which losses, if any, are to be apportioned to Members.

5.3 Schedule 'C' (Contributions by Members)

Schedule 'C' shall set out the contributions of various types, other than cash, that will be made by the individual Members towards the work and obligations of the Joint Venture and shall, as far as possible, indicate the monetary values to be placed on such contributions, which may include, inter alia, the following :

1. Staff seconded to the Joint Venture.
2. Work carried out and services provided to, or on behalf of, the Joint Venture.
3. Plant, equipment, facilities etc. made available for use by the Joint Venture.
4. Materials and goods supplied to, or on behalf of, the Joint Venture.
5. Licences, sureties, guarantees and indemnities furnished to, or on behalf of, the Joint Venture.
6. Joint Venture Disclosure form required for the Contract.

6. BREACH OF AGREEMENT

If a Member breaches any material provision of the Agreement, or delays or fails to fulfil its obligations in whole, or in part, and does not remedy the situation within fourteen calendar days of receipt of notice from the Management Committee, or another Member, to do so, the other Members shall have the right, without prejudice to any other rights arising from the default, to summarily terminate the Agreement and re-assign the defaulting Member's rights and obligations in the Joint Venture as they see fit and withhold any moneys due to the defaulting member by the Joint Venture.

Each Member shall indemnify the other Members against all losses, costs and claims which may arise against them in the event of the Agreement being terminated as a result of breach of the Agreement by the said Member.

7. INSOLVENCY OF MEMBER

Should a Member be placed in liquidation, or under judicial management, whether provisionally or finally, or propose any compromise with its creditors, the other Members shall be entitled to proceed in terms of Clause 6, as if the Member had breached the Agreement.

8. DISPUTES

8.1 Settlement

The Members shall negotiate in good faith and make every effort to settle any dispute, or claim, that may arise out of, or relate to, the Agreement.

If agreement cannot be reached, an aggrieved Member shall, if he intends to proceed further in terms of Clause 8.2 hereof, advise all other Members in writing that negotiations have failed and that he intends to refer the matter to mediation in terms of Clause 8.2.

8.2 Mediation

Not earlier than ten working days after having advised the other Members, in terms of Clause 8.1, that negotiations in regard to a dispute have failed, an aggrieved Member may require that the dispute be referred, without legal representation, to mediation by a single mediator.

The mediator shall be selected by agreement between the Members, or, failing such agreement, by the person named for this purpose in Schedule 'A'. The costs of the mediation shall be borne equally by all Members.

The mediator shall convene a hearing of the Members and may hold separate discussions with any Member and shall assist the Members in reaching a mutually acceptable settlement of their differences through means of reconciliation, interpretation, clarification, suggestion and advice. The Members shall record such agreement in writing and thereafter they shall be bound by such agreement.

The mediator is authorised to end the mediation process whenever in his opinion further efforts at mediation would not contribute to a resolution of the dispute between the Members.

8.3 Arbitration

Where a dispute or claim is not resolved by mediation, it shall be referred to arbitration by a single arbitrator to be selected by agreement between the Members or, failing agreement, to be nominated by the person named for this purpose in Schedule 'A'.

The Member requiring referral to arbitration shall notify the other Members, in writing, thereof, not later than thirty calendar days after the mediator has expressed his opinion, failing which the mediator's opinion shall be deemed to have been accepted by all Members and shall be put into effect.

Arbitration shall be conducted in accordance with the provisions of the Arbitration Act No. 42 of 1965, as amended, and in accordance with such procedure as may be agreed by the Members or, failing such agreement, in accordance with the rules for the Conduct of Arbitrations published by the Association of Arbitrators and current at the date that the arbitrator is appointed.

The decisions of the arbitrator shall be final and binding on the Members, shall be carried into immediate effect and, if necessary, be made an order of any court of competent jurisdiction.

9. DOMICILIUM

The Members choose domicilium citandi et executandi for all purposes of and in connection with the Agreement as stated in Schedule 'A'. A Member shall be entitled to change his domicilium from time to time, but such change shall be effective only on receipt of written notice of the change by all other Members.

Member No. 1

Thus done and signed at _____ this _____ day of _____20___

For and on behalf of_____*[Company]*

by *[name]* _____ who warrants his authority to do so.

_____

As witnesses 1. _____ As witnesses 2. _____

Member No. 2

Thus done and signed at _____ this _____ day of _____20___

For and on behalf of_____*[Company]*

by *[name]* _____ who warrants his authority to do so.

_____

As witnesses 1. _____ As witnesses 2. _____

Member No. 3

Thus done and signed at _____ this _____ day of _____20___

For and on behalf of_____*[Company]*

by *[name]* _____ who warrants his authority to do so.

_____

As witnesses 1. _____ As witnesses 2. _____

[Allow for additional parties as necessary].

KWAZULU-NATAL PROVINCE
PUBLIC WORKS
REPUBLIC OF SOUTH AFRICA

REFERENCE NR	CHSM
REV	1
STAGE	4
DATE	October 2025

Occupational Health and Safety Specification

(OHSE SPEC)

PROJECT NAME	**FORT NAPIER HOSPITAL: REPLACEMENT OF MEDIUM VOLTAGE SWITCH GEAR**
PROJECT ADDRESS	**1 DEVONSHIRE ROAD, PIETERMARITZBURG 3201**
WIMS NR:	**073636**
CLIENT	**DEPARTMENT OF HEALTH**
PREPARED BY	**MS PHILISIWE XABA**

TABLE OF CONTENTS

1. Introduction and Purpose

2. Abbreviations

3 Definitions

4. Key References

5. Scope of application

5.1. *Site location*

5.2.*Summary of Scope of work*

5.3. *Project team & communication strategy*

6. Summary of Designers Risk Assessments.

7. Requirements pertaining to Site Specific Health and Safety Plan Submission.

8. Principal Contractor Risk Assessments.

9. Notification of Construction Work/Permit Application

10. Site Specific Occupational Health and Safety Management (In alphabetical order)

11. Baseline Risk Assessment.

11.1 Risk Profile

12. Annexures.

12.1 Annexure A- Contractors Health and Safety Declaration

12.2. Annexure B – Structure of the SSHSP, Appointments and Registers.

12.3. Annexure C – OHS Bills of Quantities.

12.4. Annexure E-Compulsory Checklists

12.4.1. Site Establishment Checklist. (Construction Phase only)

12.4.2 Asbestos Checklist. (Construction Phase only) (Where applicable)

12.4.3. Daily Observations (Construction Phase only)
12.4.4. Risk Assessment and Method Statement Format (RAMS) (Construction Phase only)
12.4.5. Daily Safe Task Instructions (DSTI) (Construction Phase only)

1.	Abbreviations
AIA	Approved Inspection Authority
ALARP	As low As Reasonably Practicable
BRA	Baseline Risk Assessment
BOQ	Bill of Quantities
COIDA	Compensation for Occupational Injuries and Diseases Act.
CHSM	Construction Health and Safety Manager
CHSR	Client Health and Safety Representative
CR	Construction Regulations
CWP	Construction Work Permit
DMR	Driven Machinery Regulations
DEL	Department of Employment and Labour
FEMA	Federated Employers Mutual Association
FPP	Fall Protection Plan
GAR	General Administration Regulations
GSR	General Safety Regulations
HCSR	Hazardous Chemical Substances Regulations
HIRA	Hazard Identification and Risk Assessment
H&S	Health and Safety
JSA	Job Safety Analysis
MSDS	Material Safety Data Sheet
OH	Occupational Health
OHSA	Occupational Health and Safety Act, Act 85 of 1993
PC	Principal Contractor
PPE	Personal Protective Equipment
Pr CHSA	Professionally Registered Health and Safety Agent
RAMS	Risk Assessment and Method Statement

RTA	Road Traffic Safety Act, Act 93 of 1996
SABS	South African Bureau of Standards
SACPCMP	South African Council for Project and Construction Management Professions.
SARTSM	South African Road Traffic Safety Manual, Chapter 2. Volume 13
SANS	South African National Standards
SSHSS	Site Specific Health and Safety Specification
SSHSP	Site Specific Health and Safety Plan
SWP	Safe Work Procedure

2. Definitions

"Occupational Health Practitioner" Doctor or Nurse registered and in Good Standing with the Health Professions Council of South Africa and has a tertiary qualification in Occupational Health Nursing.

"Medical Surveillance" Planned program of periodic examination/medicals of employees by an occupational health practitioner.

"Act" Means, unless the context indicates otherwise, the Occupational Health and Safety Act, 85 of 1993.

"Agent (*Pr. CHSA***)"** means a competent person who acts as a representative for a client in terms of Regulation (5)5 of the Construction Regulations of 2014.

"Audit" Means a systematic examination of documents, equipment, physical on-site conditions etc. to evaluate the levels of compliance with clients OHS requirements, applicable legislative requirements, and the achievement of a safe working environment for Employees, as well as not posing a risk to other persons and the environment.

"Baseline Risk Assessment" (BRA)" A wide encompassing risk assessment performed by the client of anticipated construction activities to execute the anticipated scope of work pertaining to the project**.**

"CR" refers to the Construction Regulations 2014.

"Client" in terms of this document means Department of Public Works, Kwazulu-Natal.

"CHSR" Means Client Health and Safety Representative, an in-house employee appointed by the Client to oversee the Health and Safety Management of a project.

"CHSM" means Construction Health and Safety Manager.

“Competent person” means a person who-

a) Has in respect of the work or task to be performed the required knowledge, training and experience and, where applicable, qualifications, specific for that work or task provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualifications Framework Act, 2000 (Act No.67 of 2000), those qualifications and that training must be regarded as the required qualifications and training; and is familiar with the OHS Act, Act 85 of 1993 and with the applicable regulations made under the Act.

“Construction Health and Safety Officer” Means a person deemed competent by SACPCMP under the relevant category of registration appointed by the Principal Contractor to oversee the Safety, Health and Environmental Management on-site.

"Construction Manager (*Site Agent***)"** means a competent person responsible for the management of the physical construction processes and the coordination, administration, and management of resources on a construction site.

“Construction Plant” Encompasses all types of plant including but not limiting to, cranes, piling equipment, boring machines, excavators, dewatering equipment, and road vehicles with or without lifting equipment.

"Construction Site" means a workplace where construction work is being performed.

"Construction Supervisor" means a competent person responsible for supervising construction activities on a construction site.

"Construction Vehicle" means a vehicle used as a means of conveyance for transporting persons or material, or persons and material, on and off the construction site for the purposes of performing construction work.

"Construction work" means any work in connection with –

a) The construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure; or

a) the construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer, or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work.

"Construction Work Permit" means a document issued in terms of Regulation 3 of the Construction Regulations of 2014.

"Contractor" means an employer who performs construction work.

"Demolition Work" means a method to dismantle, wreck, break, pull down or knock down of a structure or part thereof by way of manual labour, machinery, or the use of explosives.

“Designer” Means a competent person as defined by the Construction Regulations of 2014 appointed by the Client or the Principal Contractor as Agent to design and/or supervise and/or monitor construction work on their behalf.

“Fall Protection Plan” (FPP) means a documented plan, which includes:

a) Identification of hazards and risks pertaining to the risk of falling taking the nature of the work and its environment in consideration.

b) The procedures and methods to be applied to eliminate the risk or to reduce it to a level which is as low as reasonably practicable; and

c) A rescue plan and procedures.

“Fall Prevention Equipment” Means equipment used to prevent persons, tools, equipment, machinery materials etc from falling from a “fall risk” position, including personal protective equipment, body harness, body belts, lanyards, lifelines or physical equipment, guardrails, screens, barricades, signage anchorages or similar equipment.

“Fall Risk” means any potential exposure to falling either from, off, over or into.

“Hazard” Means a source, situation, feature, activity, or anything else which has got the potential to cause harm, injury, death, environmental damage, business interruption etc.

“Hazard Identification and Risk Assessment (HIRA)” Means a document, which identifies hazards, assesses the risks and identifies the control measures, which are to be used to mitigate or reduce to a level which is as low as reasonably practicable the occurrence of hazards and risks during construction, use, operation and eventual demolition phases of a project.

“Hazardous Chemical Substance (HCS)” Means any toxic, harmful, corrosive, irritant or asphyxiating substance, or a mixture of substances, for which an occupational exposure limit is prescribed, or an occupational exposure limit is not prescribed, but which creates a hazard to health and the environment.

Induction Training: Means once off introductory training on general health and safety issues given to all employees and visitors to the site before commencement of work on site.

“Issue based Risk Assessment” Means a Risk Assessment based upon a specific issue/activity/item which could be instituted in response to the high priority risks identified in the Baseline Risk Assessment, Programme Risk Assessment or even after a near miss or actual loss event.

“Job Safety Analysis (JSA)” Means an analysis of a specific job or task according to a pre-determined procedure which helps to integrate accepted SHE principles and practises into a particular task or activity. Each step of the JSA is to identify potential hazards and to recommend the safest way to do the job.

"Medical Certificate of Fitness" means a certificate contemplated in regulation 7(8) of Construction Regulations of 2014.

“Method Statement (MS)” also known as a Safe Work Method Statement (SWMS), or Safe Work Procedure (SWP) is a document developed because of the outcome of a risk assessment by the contractor, which contains details of how each task should be performed safely.

"Principal Contractor (PC)" means an employer appointed by the client to perform construction work but may also include the responsibility of designing or overseeing the design process.

"RAMS" Means Risk Assessments and Method Statement.

"Risk" Means the probability or likelihood that the possible harm, injury, death etc potential of a hazard could be realized with a consequence attached.

"SHE" Means Safety, Health and Environmental.

"Site": Means the area handed over to the Principal Contractor for the purposes of construction work. Where there is no demarcated boundary it will include all adjacent areas, which are reasonably required for the activities for the Principal Contractor and approved for such use by the Designer and/or the Client.

"Site Specific Health and Safety File (SSHSF)" Means a file specifically pertaining to a site containing all health and safety documentation relating to the project as per the requirements of the Construction Regulations of 2014 and/or the SSHSS.

"Site Specific Health and Safety Plan (SSHSP)" means a detailed site, activity, or project specific documented plan in accordance with the client's OHSE specification indicating how health and safety will be managed during the project.

"Site Specific Health and Safety Specification (SSHSS)" means a site, project specific document prepared by the client pertaining to all health and safety requirements related to construction work.

3. KEY REFERENCES

Occupational Health and Safety Act No. 85 of 1993 and Regulations (as amended)

Compensation for Injury and Occupational Diseases Act No. 100 of 1993 (as amended)

South African Roads Traffic Safety Manual (SARTSM) Chapter 2, Volume 13 of 1999 Road Traffic Safety Act No. 93 of 1996 (as amended)

SANS Code 10400.

SANS 10085

Municipal Bylaws

4. INTRODUCTION AND PURPOSE

The *KwaZulu Natal Department of Public Works* is deemed as the "Client" in terms of the definitions of the Construction Regulations of 2014 as published in *Government Gazette No. 37305*.The Construction Regulations of 2014 in terms of *CR(5)(1)* stipulates that that the Client must prepare a suitable, sufficiently documented and coherent ,SSHSS, for the intended construction work based on the Baseline Risk Assessment, (BRA) which in turn is based on the Scope of Work and several other related factors such as

hazards and risks identified by the designer. It must be noted that for ease of reading the term “He/His” will be descriptive of both male and female gender throughout this document.

Purpose

The purpose of this SSHSS identifies the health and safety requirements the contractor needs to comply with. It will be periodically reviewed and updated (if necessary) to address and / or include:

- Changes in legislation.
- Client requirements.
- Leading practices;
- Lessons learnt from incidents; and
- Unforeseen issues.

This SSHSS also forms an integral part of the contract between the Client and the PC. It identifies and encompasses the working environment, practices and behaviors expected of all parties who have roles to play in the successful completion of this project. The SSHSS provides guidelines to comply with the Occupational Health and Safety Act, Act 85 of 1993 (OHS Act) as amended, The Construction Regulations of 2014, other applicable legislative requirements, and applicable best practices. It aims to firstly ensure compliance with applicable legislative requirements as indicated above and secondly to form the basis for the PC to develop his/her SSHSP.

As with any other plan for it to be implemented and managed effectively it requires the allocation of sufficient funds and resources, human and others, to achieve the objectives set out in the plan. In line with this requirement, Construction Regulation 5(1) (g) also requires the Client to ensure that the Principal Contractor has made adequate provisions for the cost of Health and Safety Measures in their tenders. The PC will be required to submit a Bills of Quantities (BOQ) with his SSHSP, which can be found under the Annexures section of this document which will be evaluated at the time of the evaluation of the SSHSP to satisfy the requirements of CR 5(1)(g).

This specification covers the requirements for eliminating and/or mitigating health and safety risks, injuries, accidents, and incidents on site to a level which is as low as reasonably practicable (ALARP). It addresses legal compliance, hazard identification, risk management and the promotion of a positive health and safety culture within the project. This specification also makes provision for the protection of persons other than those employed by the PC as stipulated by Sec 9 of the OHS Act, Act 85 of 1993.

It will also be noted that this document specifies certain recommendations, which should be followed so that the health and safety of all persons who may be potentially at risk and the potential risk to the environment may receive the same priority as other facets of the project such as Time, Cost and Quality.

It must be noted that this SSHSS as much as it is detailed it is not exhaustive and the onus is on the PC to ensure that he complies with Section 8 of the OHS Act, Act 85 of 1993 which reads as follows:

Sec 8(2)(d) “Establishing as far as reasonably practicable what hazards to the Health and Safety of persons are attached to any work which is performed, and he shall as far as is reasonably practicable, further establish what precautionary measures should be taken with respect to such work in order to protect the health and safety of persons, he shall provide the necessary means to apply such precautionary measures..”, this means that Principal Contractors as an employer in his/her own right must at all times ensure continuous Hazard Identification and Risk Analysis (HIRA) and the implementation of appropriate risk reduction and/or elimination measures so as to strive towards the implementation and continued

provision and maintenance of a healthy and safe working environment. The SSHSS is a performance specification aimed at ensuring that the Client and any persons it enters into an agreement with achieves an acceptable level of SHE performance.

5. SCOPE OF APPLICATION

This SHE Specification is exclusively applicable to the following project:

FORT NAPIER HOSPITAL: REPLACEMENT OF MEDIUM VOLTAGE SWITCH GEAR

5.1 SITE LOCATION

- Province - KZN
- District Municipality - UMGUNGUNDLOVU DISTRICT
- Local Municipality - UMSUNDUZI MUNICIPALITY
- Ward - N/A
- Latitude : - 30.3689425
- Longitude : - 29.6138623
- Street address (or directions) - 1 DEVONSHIRE ROAD, PIETERMARITZBURG
- THE SITE IS ABOUT 4KM AWAY FROM THE CITY OF PIETERMARITZBURG.

FORT NAPIER HOSPITAL

- **5.2. SUMMARY SCOPE OF WORK**

This project includes but is not limited to the following:

This project includes but is not limited to the following: For Both Main Station and Substation

Structural works

1. Site establishment and clearing of vegetation.
2. Removal of existing damaged Roof Sheeting
3. New Chromadek roof sheeting & New timber trusses
4. Removal of all damaged rainwater goods and replaced with new Rainwater goods
5. Scaffolding works
6. Improve the internal facade of the main substation.
7. Concrete Spalling repairs
8. Brickwork repointing
9. High Pressure cleaning to brick work
10. Waterproofing roof slab
11. Provide signage
12. Plastering
13. Painting
14. Concrete V – drains

Electrical works (Switch Gear)

15. Performing electrical work on this project will include working with existing electrical reticulation that can have a risk of electrocution; therefore, risk assessment should be conducted before the commencement of electrical work.
16. Removal of an existing Main Substation Medium Voltage (MV) Switchgear
17. Replacement of the medium voltage switch gear at main switch room
18. Replacement of miniature substations C and D
19. Replacement of ring main unit in Substation A
20. Balancing of load at miniature B
21. Installation and commission of a new MV switchgears
22. Carry out protection grading
23. Chasing of conducts into walls will be required.
24. The mechanical work will require installing of units at high level therefore safe ladders and scaffolding will be used should it be required
25. Connection of units to electrical supply will also be required
26. Rigging work

7.	The Project Team.

Initials and Surname	Discipline	Organisation	Cellular number	E-mail address
Ndabezinhle Dube	Project Manager	Public Works	072 252 9809	Ndabezinhle.Dube@kznworks.gov.za
Philisiwe Xaba	OHS (CHSR)	Public Works	072 426 0746	philisiwe.xaba@kznworks.gov.za
Justin McKelvie-King	Electrical Engineer (PA)	Ibuya Consulting Engineers	083 775 2609	justin@ibuya.co.za
Byron Xavier Raman	Structural Engineer	Map Africa	061 424 6329	Byron@mapafrica.co.za

6. SUMMARY OF DESIGNERS RISK ASSESSMENTS

INDEX

S	**Safety**
H	**Health**
E	**Environmental**
C	**Construction**
U	**Use**
M	**Maintenance**
D	**Demolition**

Discipline										
STRUCTURAL	Hazard	Risk	Type			Stage				Mitigating Measures
			S	H	E	C	U	M	D	
1.Stacking and storage	1. Heavy objects, untrained worker;	1. Slips, Trips, and Falls due to uneven surfaces	X	X		X				Stack material properly. No stacking allowed outside the planned laydown area. Control delivery and off-loading. Follow manual handling safety rules. Professional team to be consulted prior.
2. Site access	2.Unstable scaffolding, Unsafe Ladders, etc	2.Fall from unsafe scaffolding	x	x		x				Architect, Engineer to advice on site access and site plan
3.Use and operate hand tools	3.Poor quality materials	3.Risk of structural failure if materials don't meet required strength etc	X	X	X	X	x	x	x	Checklist and /or register to be completed regularly by competent staff. All portable electrical power tools need to be maintained and/or repaired. PPE required to be used. Comply with relevant regulation requirements.
4.Design	4.Toxic atmosphere , poor visibility; Oxygen deficiency; Extreme Heat	4.Suffocation; Slip and trips due to poor visibility; Heat stroke etc	X	X	X					Designs are in accordance with SANS and National Building Regulations. Stopping Contractors from doing unsafe work and point out work not done according to the design. Inspect construction work as per Client's request. Manage changes in design and additional work requested by the Client. As appointed by the client.
5. Temporary works	5.Structural failure Overloading	**5. Injuries, Fatalities**	**x**			**X**				Installation to be done under the supervision of a competent person, Contractor's designer to sign off after installation
6. Transportation of equipment	6. Poor stacking, No Traffic	**6.** Goods fall off, Vehicles	**X**	**X**						Stack material properly. No stacking allowed outside the planned laydown area. Control

to the site	management plan	collision, Injuries etc								delivery and off-loading. Follow manual handling safety rules. Professional team to be consulted prior.
7. Demolition	7. non availability of demolition plan	7. Structure fall into wrong direction and cause injuries	**X**			**X**			**X**	Demolition permits to be obtained before any works commence. Site specific demolition plan, including method statement to be drawn up and communicated to all staff involved, after approved by the Client safety representative. Where required Engineer approval to be obtained before any structural demolition work may commence. Written confirmation to be obtained that all electricity, water and gas lines have been closed off by a competent appointed person.
8. Brick - General	8. handling heavy objects,	8. Fatigues, injuries	**X**	**X**		**X**				Job rotating. Ensure workers rest between work sequence. Ensure single skin load bearing walls are braced/ propped until slab is cast. Required PPE to be used.
9. Brickwork-working off platforms	9.incompetent worker; unsupported walls, Weather conditions, Unsafe scaffolding	9. Injuries, Heat stroke, fall from unsafe scaffolding etc	**X**	**X**		**X**				Support all walls properly until finished. Check weather for in climate weather patterns. Competent/ trained staff only to work at heights. Scaffold must comply to regulations and standards. Scaffold to be built by Competent staff, inspected and signed off by Competent Inspector.
10. Concrete Surface Bed-Saw Cut Joints	10. Unskilled worker, Not wearing PPE etc	10. Injuries etc	**X**			**X**	**X**			Only a skilled saw cutting operator to undertake activity. Safety gear must be worn prior to commencing with work. Operator must know how to handle kick back of power tool and lock in of blade scenarios. Operator must be free of distractions. Stay away from dust .
11. Scaffolding erection and demolishing	11. Unsafe scaffolding; Incompetent scaffold erector,	11. Serious injuries, Fatalities, Musculos	**X**			**X**				Scaffolding must comply to regulations and standards. Scaffold to be built by competent staff; inspected and signed off by competent inspector.

	scaffold not complying etc	keletal; etc								
12. Severe weather conditions	12. Heat stroke, colds, flu. Extreme heat, wind, Rain, Cold weather etc		**X**	**X**						Check weather conditions regularly, Ensure there is a clean drinking water areas for all workers which must be covered. PPE to be supplied to workers as required for their works etc
ELECTRICAL	**Hazards**	**Risk**	**S**	**H**	**E**	**C**	**U**	**M**	**D**	**MITIGATION MEASURES**
1.Safety Hazards on site	1.Working on live environment	1.Electric shock; Electrical burns; Electrocu tion etc	X			X	X	X	X	Provide signs and training of the workforce on working near live equipment and isolate if necessary.
2.Working in a live environment	2 Working in a live environ ment etc	2.Electric shock; Electrical burns; Electrocution etc	X	X			X	X		Provide signs and training of the workforce on working near live equipment and isolate if necessary.
3. Isolation, Disconnec tion and Removal	3 Isolation and lock out procedur es not in place	Electric shock; Electrical burns; Electrocution etc	x	x			x			Provide isolation and lock out facilities and keys controlled by competent personnel
4.Electrical Terminations and Connections to the Medium Voltage Switchgear	4. Faulty electrical tools, unsafe ladder, unfit worker; untrained worker; Dust; noise etc	4. electrical shock; Electrical burns; Electrocution; lung infection due to dust; hearing impaired due to noise etc	x	x						Use properly inspected and certified tools as safe and use of registered persons

5.Working with Hazardous Materials	5. untrained worker, No use of PPE etc	5. Lung infection; hearing impaired; injuries; abrasions; wrist pain; Electrical shock etc	x	x		x			x	All personnel will be made aware of the danger by providing them with safety data sheet of the said materials
6. MV Equipment	6.Untrained worker	6.Injuries	x	x		x	x			Licensed crane operator.
7. Mini Substation Lifting Equipment	Unsafe lifting equipment	Injuries	x		x		x	x	x	Licensed crane operators to be used, cordon off lifting areas, provide fall protection and rescue plan.

REQUIMENTS PERTAINING TO SITE SPECIFIC HEALTH AND SAFETY PLAN SUBMISSION

The PC shall prepare a documented SSHSP as per CR 7(1) (a) based on the information / requirements contained in this specification, applicable legislative requirements and demonstrate how he is going to implement health and safety requirements during the construction process. It must cover all activities that will be carried out on the project site, from mobilization and set-up through to Close-out. The SSHSP must include all documentation required in terms of The Act, Regulations, and this specification for the purpose of evaluation and approval.

The PC must refer to Annexure C of the SSHSS to familiarize himself with the requirements pertaining to the contents of his SSHSP to be submitted to the CHSR for approval. Failure to comply with the requirements of Annexure C may result in unnecessary delays in the SSHSP approval process. The PC must keep the original SSHSP and submit a copy for evaluation and approval purposes, which will be kept by the CHSR for filling and referencing purposes.

Upon approval of the PC's SSHSP, the CHSR will issue the final letter of SSHSP approval as required by CR 7(1)(a) and confirm his appointment as required by CR 5 1(k). The PC must file the letter on his SSHSF. It must be noted that Construction work may not commence until an official letter issued by the CHSR has been issued. The PC shall be responsible for ensuring that adequate information is submitted as supporting documentation with his completed documentation.

The approved SSHSP included in the SSHSF as well as this SSHSS must always be kept on site and include all documentation required in terms of The Act and this specification. It must be kept in mind that All Sub Contractors must open their own SSHSP's and files. These health and safety files shall be approved in writing by the PC's CHSO, as required by CR 7. 1 (c)(x), a copy of which must be filed on the Sub Contractors as well as the PC's Health and Safety File. The Sub-Contractor must also be appointed in terms of CR 7. (c)(v). The Sub Contractor's Health and Safety Files will also be subjected to evaluation by the CHSR when conducting an Audit in addition to the evaluation by the CHSO.

It is of the utmost importance that the PC takes note of the following when submitting his SSHSP for approval **in addition the requirements of Annexure C**:

- Completion and submission of Annexure A "Health and Safety Declaration" to the effect that he has the competence and necessary resources to carry out the work safely in compliance with the Occupational Health and Safety Act and its Regulations.

- A valid Letter of Good Standing.

- Two detailed Risk Assessments and Method Statements (RAMS) of two priority hazards as identified by the Risk Profile of anticipated construction activities for review by the CHSR, with evidence of the CHSO input to enable the CHSR to evaluate the Risk Assessors competency in terms of being able to conduct sufficient Risks Assessments and subsequent Method Statements.

- Valid Proof of Competencies, including CV's of Key Appointments.

8. PRINCIPAL CONTRACTORS RISK ASSESSMENTS.

A detailed hazard identification and risk assessment processes must be followed for all work to be performed as well as for all associated equipment and facilities. The contractor must ensure that effective procedures and assessment systems are in place to control hazards and to mitigate risks to levels that are ALARP.

The risk assessment processes must be applied to:

- Routine and non-routine activities.
- Planned or unplanned changes.
- All employees, sub-contractors, suppliers, and visitors; and
- All infrastructure, equipment, and materials.

The risk assessment processes and methodologies must be appropriate for the nature and scale of the risks and must be implemented by competent persons.

The process of analyzing and managing risk must include the following:

- Establishing the context of the risk assessment.
- Identifying hazards and determining possible risk scenarios (unwanted events).
- Evaluating risks and assigning ratings (classification).
- Recording the risk analysis in a risk register.
- Managing risks according to their classification (prioritizing for action).
- Identifying and implementing control measures through the application of the Hierarchy of Risk Controls to ensure that risks are managed to levels that is as low as is

reasonably practicable (ALARP).

- Developing action plans for reducing risk levels (where possible).
- Verifying the completion of actions.
- Re-evaluating the risks and classifications as appropriate; and
- Reviewing and updating the risk register.

The Pc must refer to the BRA and summary of hazards and risks identified by designers when conducting his risk assessments.

Once the SSHSP of the PC has been approved where two detailed Issue Based Risk Assessments and Method Statements (SWP's) of two priority hazards as identified by the BRA Risk Profile has been approved, such approval will only be granted in terms of approved RAMS up to and including site establishment.

During the site establishment period the PC will be required to submit his construction program. Health and safety management matters must be included in the program which will form the basis for the CHSR calling for RAMS for approval purposes. RAMS for future work must be supplied via e-mail to the CHSR at least 72 hours before the anticipated activity commencement date, unless otherwise agreed, followed by a WhatsApp informing the CHSR of such e-mail.

Work may not commence pertaining to RAMS submitted for approval until such RAMS have been approved. Should the CHSO continuously submit RAMS late, it will be for the PC's account. Should the PC's CHSO persistently submit poor quality RAMS, the situation will be brought to the Project Leaders attention for intervention and engagement with the PC.

The PC must ensure that the CHSO is included in production, planning, sessions/meetings to ensure that the appropriate RAMS as required are available and completed timeously. Under no circumstances may a CHSO perform a risk assessment in isolation. The active participation of all relevant role-players is mandatory.

A Risk Assessment must be followed by a Method Statement (SWMS/SWP) which describes in detail how the job or task is to be performed in a logical, sequential manner. RAMS must be a "Team" effort, Site Management Representatives, Supervisory Personnel, Technical Experts, and workers must be part of the RAMS process.

RAMS must be reviewed as a minimum on an annual basis, when changes are made to work methods statements and following an incident.

9. Notification of Construction Work / Construction Permit.

The PC must submit in terms of Construction Regulation 4 in the format of Annexure 2, a Notification of Intention to Commence Construction Work to the closest Department of Employment and Labour. A stamped copy must be provided to the CHSR after submission. The SSHSP will not be approved until such Notification has been received by the CHSR. A copy of the approved notification to Commence Construction Work must be kept on the SSHSF.

10.	SITE SPECIFIC OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT (IN ALPHABETICAL ORDER)
10.1.	Accident, Incident Investigation.
10.2.	Alcohol and Drugs.
10.3.	Appointments.
10.4	Consultation, Communication and Liaison
10.5.	Close-out requirements.
10.6.	COIDA.
10.7.	Competency and Training
10.8.	Confined Space Work.
10.9.	Construction Supervision.
10.10.	Defects Reporting and Correction.
10.11.	Demolition.
10.12.	Delivery and Placement of Containers, Park Homes etc.
10.13.	DSTI's.
10.14.	Electrical Connections.
10.15.	Emergency Drills and Evacuation Procedures.
10.16.	Environmental Management Plan.
10.17.	Edge Protection.
10.18.	Extreme Weather Conditions.
10.19.	Fall Prevention Plan and Planning.
10.20.	First Aid Boxes and Equipment.
10.21.	Fire Extinguishers, Precautions and Fighting.
10.22.	Fuel and Flammable Liquids.
10.23.	General Record Keeping.
10.24.	Hand Tools.
10.25.	Hazardous Chemical Substances
10.26.	Hazard Identification and Risk Analysis (HIRA).

10.27.	**Hazards and Potentially Hazardous Situations.**
10.28.	**Health and Safety Audits, Monitoring, Reporting and Statistics.**
10.29.	**Health and Safety Disciplinary Procedure.**
10.30.	**Health and Safety Management Notice Board.**
10.31.	**Health and Safety Organogram.**
10.32.	**Health and Safety Plan Submission.**
10.33.	**Health and Safety Policy.**
10.34.	**Health and Safety Training.**
10.35.	**Heat Stress and Sun Protection.**
10.36.	**High Voltage Equipment and Installations.**
10.37.	**Housekeeping.**
10.38.	**Incident and Injury Management.**
10.39.	**Induction Training**
10.40.	**Ladders, Portable.**
10.41.	**Lighting.**
10.42.	**Lifting Machines and Tackle.**
10.43.	**Manual Handling of Materials.**
10.44.	**Maintenance.**
10.45.	**Medical Fitness / Fitness to work**
10.46.	**Method Statements, Safety (SMS)(SWP'S)**
10.47.	**Noise.**
10.48.	**Notices.**
10.49.	**Notification of Construction Work/Construction Permit**
10.50.	**Occupational Hygiene (Personal Hygiene and Infectious Diseases).**
10.51.	**Personal Protective Equipment. (PPE)**
10.52.	**Plant and Machinery.**
10.53.	**Planned Task Observations**
10.54.	**Pneumatically Powered Tools and Equipment.**

10.55.	**Portable Electrical Tools.**
10.56	**Public Safety and Security.**
10.57.	**Risk Assessment of Plant and Equipment.**
10.58.	**Roof Work.**
10.59.	**Safety Meetings: Pre- Start, Review etc.**
10.60.	**Safety, Health and Environmental Representatives and Committee's.**
10.61.	**Safety Officer (CHSO), Roles and Responsibilities.**
10.62.	**Signage.**
10.63.	**Site Clearance.**
10.64.	**Site Establishment**
10.65.	**Site Layout Plan.**
10.66.	**Site Specific Safety Rules.**
10.67.	**Smoking on Site.**
10.68.	**Speed restrictions and Protections.**
10.69.	**Stacking and Storage of materials.**
10.70.	**Structures and Temporary Works.**
10.71.	**Sub-Contractors.**
10.72.	**Transportation of Workers.**
10.73.	**Trespassing.**
10.74	**Toolbox Talks**
10.75.	**Vehicles and Traffic Management.**
10.76.	**Ventilation.**
10.77.	**Vibration.**
10.78.	**Visitors to Site.**
10.79.	**Waste Management.**
10.80.	**Water Management.**
10.81.	**Welding, Grinding, Cutting etc.**
10.82.	**Welfare Facilities.**

10.83	Working at Heights.

LISTED BELOW PLEASE FIND SITE SPECIFIC OCCUPATIONAL HEALTH AND SAFETY STIPULATIONS IN ALPHABETICAL ORDER. IT MUST BE NOTED THAT SOME ITEMS MAY BE OF MORE DETAIL THAN OTHERS, THE REASON BEING THAT DUE TO THE LEVEL OF RISK ASSOCIATED WITH THESE ITEMS THAT MORE DETAILED INFORMATION IS NEEDED TO BE BROUGHT TO THE PC'S ATTENTION, BUT THIS MUST NOT BE SEEN AS AN INDICATOR THAT OTHER ITEMS ARE OF LESS IMPORTANCE.

10.1.	Accident, Incident Investigations

All Injuries sustained on the site are to be categorized into the following categories:

- first aid.
- medical attendance (Doctor).
- disabling; and
- fatal injuries

The PC must manage Accident/ Incidents. A procedure for the management of all health and safety accidents/Incidents must be drawn up and implemented. This procedure must define the responsibilities, methodologies and processes that must be followed for:

- Reporting an incident/accident.
- Investigating an incident/accident.
- Analysing an incident/accident to determine the root cause.
- Identifying and implementing corrective actions to prevent a recurrence; and
- Communicating information concerning an incident to relevant persons and/or groups.

A documented, detailed investigation report must be submitted with 7 days to the Project Team which and as a minimum include the following:

- The date, time, and location of the accident.
- Witness statements, including residential and contact details.
- A detailed description of the accident, including photographs.
- The Initials, Surnames, residential and contact details of any injured person/s.
- Injury details (if applicable).
- A summary of the first aid and / or medical treatment provided (if applicable).
- The status of any injured persons (if applicable).

- The root causes of the incident; and
- Detailed corrective actions, including responsible persons and target dates for implementation.

A Near Hit/Mis is an incident which may have the potential to cause harm, injury or damage and need therefore to be reported and investigated to prevent the potential negative effect it may have been realized.

The contractor/ Supervisor/Employee must report each incident that occurs (including Near Hits/Mis) to the CHSO without delay. Preliminary details must be recorded on the same workday or shift on which an incident occurs. In the event of a significant incident, with the potential to cause serious injury, harm or damage taking place, work must cease and may only resume once the necessary actions, including the re-evaluation of any relevant risk assessments have been taken to reduce the risk of recurrence. Work may only be permitted to recommence once formal authorization has been granted by the CHSO after consultation with the CR 8(1).

In the event of a person requiring First aid such cases must also be recorded in the First Aid Dressing Register. All accidents /Incident investigation reports and related documentation must be recorded on the safety file. All disabling and fatal accidents must immediately be reported to the CHSR telephonically after they occur followed by and e-mail notifying the CHSR of accident.

All incidents as described in Section 24 of the OHS Act must be reported in the prescribed period and manner to the Department of Employment and Labour. Copies of Section 24 reports, including WCL 2 forms must be forwarded to the CHSR.

The PC must on a monthly basis include in his Self-Audit Report all injuries sustained on site with the required remedial measures taken. Accident/ Incidents and the identified Root Causes with the recommended corrective measures must be included on the agenda of Safety Committee Meetings for discussion and reported back on at the next progress meeting.

10.2.	**Alcohol and Drugs**

A fit-for-work policy must be in place, incorporating zero tolerance for any drugs (including prescribed medication with an intoxicating effect) or alcohol in the system of a driver or operator. Drug and alcohol testing must be part of all medical fitness assessments for the issue of medical fitness certificates.

No alcohol and other drugs will be allowed on site. No person may be under the influence of alcohol or any other drugs while on the construction site. Any person on the construction site who is on prescription medication must inform the CHSO officer or the safety representative accordingly. A register must be kept of all persons on prescription medication with the contact details of the medical practitioner prescribing such medication.

Any person on the construction site who is suffering from any illness/condition that may have a negative effect on his/her safety performance must report this to the CHSO or Safety Representative.

Any person on the construction site who is suspected of being under the influence of alcohol or other intoxicating drugs must be removed from site. He must be instructed at the time of being removed from site to report the next day for a preliminary inquiry. A full disciplinary process must be followed by the Contractor concerned and a copy of the disciplinary action must be forwarded to the PC for his records.

10.3.	Appointments

The PC shall make appointments as per the Act and its Regulations; structured and guided by the scope of works and its associated risks. The PC must refer to Annexure C for a list of appointments which may be applicable to his Safety Management Structure.

The PC will have to appoint a competent full-time CHSO registered with SACPCMP for this project, who will be always on site due to the risks associated with the activities to be performed.

All health and safety appointments must be done in writing and kept on the SSHSF. Where appointments have lapsed or new appointments have been made, such previous appointments and the new appointments must be kept in the SSHSF. Expired appointment may not be discarded or destroyed.

All SHE Appointments must be reflected on the Site SHE Organogram, which must be kept up to date, filed in the SSHSF and displayed in the Site Office.

It is acknowledged that the PC may need to allocate more than one appointment to certain staff members. This practice may only take place if health and safety standards would not be negatively affected, with the CHSR reserving the right to specify otherwise if deemed that it may affect health and safety standards.

- The CHSO must complete the Asbestos Removal Checklist, Annexure F, item 12.6.2 sign it, have it signed by the CR8(1) or CR 8 (7) appointee and forward it to the CHSR within 24 hours should the CHSR not be present at the time of asbestos removal starting.
- Normal construction work may only proceed after asbestos removal in the previously designated asbestos zone upon written permission being obtained from the AIA.
- Stripped asbestos must be placed in an enclosed skip or container, no storage on the ground or other areas permitted.
- Disposal certificates must be obtained with 14 days of disposal and kept on the SSHSF.

10.4	Consultation, Communication and Liaison

The PC must establish and maintain effective communication and consultative processes, allowing for a two-way dialogue for the duration of the project to ensure that:

- All personnel are kept up to date regarding health and safety matters e.g., Hazards and risks, incidents and lessons learnt, leading practices, performance against objectives, etc.
- General health and safety awareness levels are kept high.
- Prompt feedback is given to personnel about health and safety issues or concerns that they raise; and
- Relevant, and often critical, health and safety related information e.g., design changes, instructions, reporting of hazardous conditions or situations, etc. is effectively disseminated.

This can be achieved by means of Toolbox Talks, Project Safety Meetings, Health, and Safety Awareness Programs etc.

10.5.	Close-out

In terms of CR7(1)(e) and CR7(2)(b) the PC must hand over a consolidated SHE File to the Client when Construction work ceases, and the PC hands the site back to the Client. The Sub-Contractors appointed by the PC are required to do the same for the PC when exiting the site after completion of their work. The onus is on the PC to allow adequate time to ensure the correctness and approval by the CHSR of the files prior to exiting the Site.

The following list is an example of what should be included in the Close –out files but is not exhaustive. The CHSR may require further information at the time of completion of the project and the PC will have to ensure that all instructions are met. All records from the start of the project must be included. Daily or monthly inspection records are not required unless they are related to an accident. All records must be in electronic format and submitted to the CHSR for approval in adequately formatted lists and folders. The Layout should be logical and in the same order as in the site files. Upon final approval of the files by the CHSR, two hard copies of the electronic files must be handed over to the CHSR unless otherwise indicated by the CHSR.

Health and Safety close out file requirements.
PC File to include the following:

- Copy of Notification of Construction Work/Construction Permit, stamped by DOL.
- Client SHE Specification.
- Principal Contractor's SHE Plan.
- Client Letter of SHE Plan Approval.
- Organograms (Original and amended.)
- List of SHE Legal Appointments (Originals and amended).
- List of all employees employed on a permanent or contractual basis over the duration of the contract, PPE receipt records.
- Medical Fitness Certificates for all employees.
- Letters of Good Standing for the Project.
- Incident/ Accident Records.
- NCR's.
- CHSR Health and Safety Audits.
- Risk Assessments.
- Method Statements.
- Safe Work Procedures etc.
- List of all Sub Contractors.

Sub-Contractor Files to include the following:

- SHE Plan.
- SHE Plan Approval letter issued by the PC.
- Organogram/s (Original and amended).

- List of SHE Appointments (Original and Amended).

- All employees employed on a permanent or contractual basis over the duration of the contract receipt records.
- Medical Certificates of Fitness for all employees.
- PC and own audits.
- Mandatory Agreements (if applicable).
- Risk Assessments.
- Method Statements.
- Safe Work Procedures
- Letters of Good Standing.
- Incident Records.
- Non-Conformance records.

PC to include in its SHE File the following documentation if not being attended to by other discipline of PSP Team:

- All drawings for temporary structures (suspended beams etc.).
- All operating manuals for any systems that require on-going maintenance, and
- Copies of test results, policies, and procedures for environmental monitoring (silica, noise, dusts etc.).

Defect and Liability Period

The H&S files must be kept 'live' for the defect and liability period by the Principal Contractor, including those of their Subcontractors. Any work required during the defect and liability period will require an assessment of the H&S file by the PC's CHSO prior to any work commencing.

10.6.	**COIDA**

The PC must ensure that all employees are fully covered in terms of the COID Act, either through the Workmen's Compensation Commissioner or another registered approved institution and that such cover will remain valid for the duration of the project. Failure to keep his/her cover valid will result in instructions to cease construction work being issued.

The PC must ensure that all Sub-Contractors appointed by him are fully covered in terms of the COID Act, or another institution as indicated above, and that such cover must remain valid for the duration of their contractual relationship with the PC.

The PC must have Public Liability Cover, which must adequately make provisions for any losses because of his and/or his employee's acts and/or omissions, which must remain valid for the duration of the project.

10.7.	**Competence and Training**

The CEO (OHSA S16.1) of the PC will be overall responsible for the appointment of competent Construction Managers and site staff for the duration of the project unless it has been delegated to the Section 16.2 Appointee. All legal appointments are to be made with relevance to the type of work to be

performed and kept current with the project programme. The PC, all contract employees, and their supervision must be in possession of the required qualifications or licences where the activities they must perform require such qualifications or licences.

The following Health and Safety competencies are applicable to certain appointments:

Sec 16.2 and CR 8.1: Supervisors Safety Course (IRCON) or equivalent and Legal Liability Course.
Safety Officer: SAMTRAC/ Lex Nexis 3 week SHE Management Course / Nebosch, or equivalent.
SACPCMP CHSO Registration and Relevant Experience.
Safety Representatives: SAQA Accredited SHE Representative Training Course.
Risk Assessor: SAMTRAC / Lex Nexis 3 week SHE Management Course / Nebosch or SAQA accredited Risk Assessors Course
First Aider: SAQA accredited Level 2 First Aid Course.

Where operations are being performed such as Crane Operations, Riggers, Scaffold Erectors, and Inspectors all such operators must be in possession of proof of qualifications, which is in compliance with Legislation, National qualifications Framework, Act 2000: Act No 67 of 2000, or similar industry standard where legislation does not prescribe such training. It must be noted that course providers used for training purposes must be accredited course providers.
Training must be given to each employee, including sub-contractor employees, to equip them with the knowledge and skills, understanding of the hazards and the risks as well as mitigating measures to enable such employee as far as is reasonably practicable to perform his duties in a safe manner.

Specific competency profiles and selection criteria (fitness for work) must be developed for all roles where significant health or safety risk exists.

A formal training needs analysis must be carried out based on the competency profiles and a training matrix must be developed for the project. Competency-based training must be provided and include operational controls (procedures and work instructions), management of change, and emergency response. All employees must hold and maintain the required competencies (including appropriate qualifications, certificates, and licences) and are under competent supervision.

A site-specific induction and orientation programme that highlights health and safety requirements, procedures, and significant hazards, risks and associated control measures must be in place for all new employees and visitors. Personnel must be trained on new or amended standards, rules, SWMS/SWP's, Risk Assessments etc. Refresher training must be conducted where required e.g., where employees are found disregarding rules etc. Records must be kept of training, qualifications, experience etc. Whenever training is given follow ups must be conducted to evaluate the efficiency of the training.

10.8.	**Confined space work**

The PC must comply with the OHS Act, General Safety Regulation 5

Detailed RAMS must be conducted, SWMS /SWP's must be developed and communicated in writing to persons designated to perform work in confined spaces. Confined space entry work requires the issue of a Confined Space Entry Permit which has been issued by an authorized competent person.

Responsibility for safe work procedures from entering, whilst working in the confined space, and

including exiting the confined space is the responsibility of the Contractor. The Contractor must ensure that all measures have been implemented to address hazards and their associated risks to a level which is ALARP.

The Contractor is responsible for the provision and correct use of all of all required tools and equipment required to conduct the work in the confined spaces, e.g. Tripods, Testing Equipment, Signage, Communication Equipment etc.

10.9.	Construction Supervision

As indicated in the previous paragraphs the CEO (OHSA S16.1) of the PC will be overall responsible for the appointment of competent Construction Managers and site staff for the duration of the project. These appointments will be tasked with different supervisory responsibilities to ensure the provision of a safe working environment. The PC is again reminded to refer to Annexure C to determine what Supervisory Appointments need to be made taking into consideration the scope of work, Legislative requirements etc. Note must also be taken of at which stage certain appointments need to be made. The construction team is to ensure the appointed CHSO is kept up to date with all planned activities, to ensure all H&S requirements are met.

The PC will have to appoint a competent full-time Supervisor for this project, who will be always on site due to the risks associated with the activities to be performed.

The PC must ensure that all equipment is inspected before use, that the permissible workload is displayed, that load test certificates are available, equipment is operated by trained competent operators etc.

10.10.	Defects reporting and correction

The purpose of any inspection is to determine deviations in need of remedial action. Where defects are identified during any routine inspection, pre-start check or during operation or use of any tools, equipment, motor vehicle, tools, or equipment, etc. it needs to be reported immediately.

Steps need to be taken to remedy such defects reported for the purpose of repairing such tools, equipment, etc. Where such remedial action cannot be actioned, immediate measures such as the fitting of Tags, taking out of service etc. needs to be applied to limit further use until repairs/replacements have been completed and re-inspection carried out. Such defect reports must be done in writing.

10.11.	Demolition

The PC needs to ensure compliance with OHS Act, Sec 8 and CR 14.

A detailed Structural Engineering Survey needs to be carried out before demolition work takes place and

a Demolition Method Statement must be developed based on the structural engineering survey and include:

- Scope of Work.
- Termination of services requirements.
- Construction vehicles and plant and equipment to be used.
- Personnel Involved.
- Procedural steps to be followed.
- PPE Requirements.
- Signage requirements.
- SHE measures to be applied.
- Waste Management and housekeeping measures to be applied.
- Emergency Procedures applicable.
- Training to be rendered.

The Proposed Demolition Plan must be signed off by the Structural Engineer and the CHSR **PRIOR** to Demolition Work being conducted.

10.12.	**Delivery and Placing of Containers. Park homes etc.**

The PC must ensure compliance with OHS Act, Sec 8 and Cr 22. The items must be placed according to the predetermined positions indicated on the Site layout Diagram. Soil conditions, overhead hazards etc need to be taken into consideration when doing Risk Assessments and developing the required method statements. Only trained competent workers and supervisors may be used to execute and supervise the work operations.

10.13.	**DSTI's**

The Daily Safe Task Instruction, DSTI, forms a critical part of the Risk Management process No work may be conducted on site without a valid DSTI signed off by the relevant signatories. Supervisors must have the competency to be able to complete DSTI's correctly and the work area must be inspected at the end of the shift.

A DSTI is a pre-start discussion amongst the members of a work team, led by the appointed supervisor, aimed at anticipating hazards and potential risks associated with the activities planned for the day or shift, and ensuring that the necessary control measures are in place to prevent incidents.

At the start of each day or shift, prior to the start of any work, each appointed supervisor must inspect the work area which he is responsible for and ensure that it is safe. He must then conduct a DSTI with his work team specifically concerning the tasks that they will be performing during the day or shift. The relevant SWMS/SWP for the activity must be used as the basis for the discussion. The correct work method must be reiterated, and the identified hazards, risks and control measures must be discussed with the team allowing team members to contribute to the discussion.

Any team member arriving late must first be taken through the information that was discussed prior to his arrival before being permitted to start working. If the work method changes or scope changes

after activities have already begun, the DSTI must be revisited and updated with the team, and the changes must be signed off by the relevant CHSO.

Every member of the work team must sign the DSTI attendance register. The attendance records must be kept and maintained in the contractor's SSHSF.

10.14.	Electrical connections

The PC must implement and comply with OH&S Act, Electrical Installation Regulations and Construction Reg 24. All electrical installations must be carried out by an appointed and qualified certified Electrical Installation Electrician. A Certificate of Compliance (COC) must be issued and kept on the SSHSF. Temporary Electrical Installations must be inspected on a weekly basis and recorded in an appropriate register, which must be kept in the SSHSF.

10.15.	Emergency drills and evacuations and Procedures

The PC must develop, implement, test, and maintain an Emergency Response Plan, incorporating emergency evacuation procedures that focuses specifically on the contractor's team and work activities. The plan must be risk-based and must detail the procedures that must be followed when responding to all potential emergency scenarios such as a medical emergency including first aid response, a fire, an explosion, a hazardous substance spill, rescue from height, rescue from a confined space, etc.

Consideration must be given to the procedures of other occupants on the premises and their emergency procedures to ensure that in the event of an emergency that the PC's Emergency procedure does not hinder or clash with their procedures. Details of any arrangements with external emergency response service providers must be included.

The plan must be adequately resourced to ensure effective implementation. These resources must include appropriate personnel, external emergency response service providers, emergency response equipment, and warning devices. All equipment and warning devices must be identified, maintained, and tested to always ensure availability.

An Emergency Response Team (ERT) responsible for the implementation, management and execution of the Emergency Response Plan must be established. The roles and responsibilities of each team member must be clearly defined in the plan. Each team member must receive appropriate training to ensure that each role is performed competently.

The process for managing incident communication, notification, and reporting must be incorporated into the Emergency Response Plan. The responsible person(s) must be clearly identified, and the protocols for communicating with internal and external stakeholders must be defined.

At project work site:

- A suitable evacuation alarm (siren) must be provided. All persons working in an area where an evacuation alarm is sounded must respond to it immediately.
- Suitable fire-fighting equipment must be provided and maintained, and personnel must be trained in fire-fighting procedures and the use of fire-fighting equipment.
- Suitable first aid equipment and supplies must be provided and maintained, and an adequate number of appropriately trained First Aiders with kits must be in place.

- Emergency assembly points positioned in safe locations away from containers, plant and equipment must be designated and conspicuously signposted. In the event of an evacuation, all persons, personnel, and visitors, must assemble and be accounted for at these emergency assembly points.
- All personnel must receive awareness training on the applicable emergency response procedures, and all visitors entering the site must be properly instructed in these procedures as part of their induction training.
- The emergency response procedures must be displayed on notice boards.
- A Site Layout Plan indicating evacuation routes, emergency assembly point locations, and the positioning of emergency equipment (fire extinguishers, first aid boxes, etc.) must be prominently displayed in all offices, boardrooms, notice boards, and in other locations on the site as may be required.
- An up-to-date list of emergency telephone numbers must be compiled and maintained. A copy of this list must be posted at each site entrance, in each office, and notice board.
- Emergency response drills must be conducted to test the effectiveness of the emergency procedures and equipment, as well as the knowledge and proficiency of the response personnel. Where appropriate, drills must include liaison with and the involvement of external emergency response service providers. A variety of emergency scenarios must be tested including, but not limited to, medical emergencies, fires, rescues, and hazardous substance spills. A drill must be carried out one month after site establishment and six-monthly thereafter. Each drill must be monitored, and the outcomes (highlights and shortcomings) must be documented. Corrective actions must be identified and implemented to address the shortcomings, and the Emergency Response Plan and associated procedures must be amended as required.

10.16.	**Environmental Management**

The PC must take all precautionary steps to prevent any pollution because of his activities. Matters such as waste disposal, cement run-off, not permitting vehicles leaking oil and fuel on site, not permitting disposal of water used for cleaning paintbrushes into normal wastewater disposal lines, not permitting the burning of materials etc must be addressed in his Environmental Management Plan.

Workers must be familiarized with the contents of the Environmental Management Plan as part of the Induction. The PC's Environmental Management Plan must be submitted with his SSHSP for approval.

10.17.	**Edge Protection**

Persons falling over open edges can result in severe injuries. The PC's responsible person must ensure that edge protection forms part of the Fall Protection Plan. Edge protection must be able to withstand the load imposed of an average worker's weight should the worker lean against such edge protection. All edges which pose a fall risk to persons must be protected. Barricading tape or snow netting is not deemed as suitable edge protection and may only be used to highlight such edges.

Activities, which may create temporary open edges such as the removal of drain covers must be always supervised whilst open or be cordoned off with temporary suitable barricading.

10.18.	Extreme weather conditions

Adverse weather conditions can lead to loss of life and damage to structures and plant. The PC must develop an emergency plan which stipulates measures how to mitigate the impact such weather conditions can have. The Contractors' Emergency Plan must include procedures to be followed for adverse weather conditions such as high winds, Lightning, Flooding etc. Response measures must be communicated to the appropriate Supervisory Staff including materials required such as ropes, shutter board etc.

In the event of impending adverse weather or other conditions, Emergency response Staff and Supervisory Staff must be made aware of the impending weather conditions and the possible need to implement the required response measures.

10.19.	Fall Protection Plan and Planner

PC to comply with OHS Act, Sec 8 and CR10. When there is a risk of falling off, into or over a risk assessment must be carried out regardless of the potential fall distance. The PC shall appoint a competent Fall Protection Planner. The Fall Protection Planner shall have the following minimum qualifications:

- Fall Arrest Course (Accredited to SAQA Unit Standard 229998)
- Fall Protection Planner (Accredited to SAQA Unit Standard 229994)

An appropriate, project specific FPP, developed by the appointed competent appointed Fall Prevention Planner must be developed, and submitted as an annexure to the SSHSP when submitting the SSHSP for approval by the CHSR. The following aspects as a minimum must be included in the FPP:

- Risk Assessment identifying areas where a Fall Risk may exist as well as the required mitigating measures e.g., Signage, Edge Protection, Hard Barricading etc.
- Permit system for working at heights.
- Prevention measures for falling tools or equipment, and persons, and link to emergency plan regarding rescue.

10.20.	First Aid Boxes and Equipment

The PC to comply with GSR 3. The contractor shall ensure that enough competent First Aiders is appointed and present on site. All First aiders must have a level 2 First Aid certificate. Where Sub-Contractors are appointed, they need to comply with GSR 3 and have trained, competent First Aiders on site. If they do not have trained competent First aiders, they may enter into a First Aid Agreement with the PC to provide such services, subject to the PC having enough First Aiders on site as well as First Aid Equipment. The written agreement entered with Sub-Contractors must be kept on the PC as well as the Sub-Contractors SSHSF.

Adequately maintained First Aid equipment compliant with Statutory Safety Regulations must be

available on site. The contents of First Aider kit must always comply with minimum amount as per Annexure to GSR. Records of First Aid Treatment administered must be kept in an appropriate register.

The Location of the First Aid facilities must be indicated with the required SABS approved Symbolic Safety Signage posted at the entrances to such facilities. The name of the First Aider must be displayed in addition to Symbolic Safety Signage.

10.21.	Fire Extinguishers, Precautions and Fighting

The PC must ensure that the location of fixed Fire Extinguishing Equipment is indicated on his Site Layout plan and in his Emergency Plan. The procedure to be followed in the event of a fire must be translated into the languages of all workers on site, posted on notice boards, communicated to workers and records kept of such communication.

All work involving the generation of a Fire Risk may only be executed upon the issue of a Hot Work permit, which include the presence of Fire Extinguishing equipment and checking for smouldering materials.

Fire precautions on construction sites in addition to the requirements of CR 29 must include Good Housekeeping, the keeping of minimum amounts of Flammable liquids etc. SABS compliant signage such as “No Smoking” “No Naked Flames” etc. posted where appropriate.

Sufficiently trained persons such as Supervisors need to be available on site to be able to perform fire-extinguishing exercises and use equipment correctly. Persons involved with activities such as welding, grinding etc. must be able to perform fire-extinguishing exercises when required.

All Fire extinguishing Equipment must be serviced annually, numbered, on register and inspected by a trained competent person at least every six months. All fire extinguishing equipment which has been discharged or damaged in any way must be sent off site and be attended to by a SABS accredited Service Agent.

10.22	Fuel and Flammable liquids

The PC must ensure compliance with OH&S Act - General Safety Regulation 9 and Temporary Storage of Flammable liquids on Construction Sites, Construction Regulation Reg.25.

Storage areas must be provided with a bund wall to contain 110% of the maximum volume of the container/s stored in the area. Drip trays of sufficient size must be provided at tap off points.

Storage Containers must be clearly marked with a “Flammable Liquid, No Smoking & No naked Flame” signs, be clearly marked to indicate contents of the tank and bonded to prevent static electricity sparks being generated. An adequate numbers of dry chemical fire extinguishers, each with a minimum capacity of 4.5kg, must be provided,

Before any fuel driven plant or equipment is refuelled, it must be switched off, and no refuelling may take place where machinery is kept running. Refuelling must take place at designated safe areas and appropriate warning signs installed.

The Contractor must ensure that storage areas must be designated at a safe distance from other buildings. It must be kept free from all combustible materials and must be constructed from brick/ mortar/steel, no timber or similar combustible materials may be used.

The following SABS compliant Symbolic Safety Signage need to be displayed: “No Smoking” and” No Naked Flames”, Fire extinguisher and Location signs.

10.23.	General Record Keeping

The PC and Sub contractors must keep and maintain Health and Safety records to demonstrate compliance with the Clients SSHSS, OHS Act, Act 85 of 1993 and the Construction Regulations of 2014. The PC must ensure that records of all incidents/accidents, training, inspections, audits etc. are kept in the SSHSF held in the Site Office.

THE SSHSF must always be present on site. The PC must ensure that every sub-contractor opens and maintains his own SSHSF under the control of the PC’s responsible person.

10.24.	Hand Tools

Hand Tools and its use can contribute to accidents and incidents. The PC must ensure that all Hand Tools brought onto and used on site are safe for use. Hand tools must be inspected by an appointed competent person at least once a month and the results of such inspections to be recorded on an appropriate register. If hand tools are found to be unsafe, it needs to be removed, tagged unsafe for use and removed from site.

No Makeshift hand tools may be brought onto and used on site. If found such hand tools must be removed from site with immediate effect and/or disposed of.

10.25.	Hazardous Chemical Substances (HCS)

The PC must comply with the Hazardous Chemical Substances Regulations as published in Government Notice No. R. 1179 dated 25 August 1995 and amendments thereto. No HCS may be permitted to be brought on site without a MSDS. The PC must ensure that all the necessary use and storage precautions are taken and that the required safety equipment, first aid measures etc is available.

All employees required to use HCS, or products containing Hazardous Chemical Substances must be adequately and comprehensively trained with regards to the requirements of the Hazardous Chemical Substances Regulations including the potential sources of exposure and the potential risks to their health caused by exposure.

MSDS’s for all Hazardous Chemical Substances must be kept on site in the SSHSF and recorded in a HCS Register.

10.26.	Hazard Identification and Risk Assessment (HIRA)

The PC must comply with Sec 8 of the Act and CR 9 by allowing for and ensuring that Site-Specific HIRA’s are conducted by an Appointed Competent Person. Supervisory staff must be equipped with the required skills to do HIRA’s.

The purpose of a RA is to firstly identify main activities which form part of the construction process,

then its sub activities, then the hazards associated with the sub-activities, the risks associated with the sub-activity hazards, then determining the Pure Risk level by using a risk matrix, propose risk reduction/control measures and then re-evaluating the effect such risk reduction/control measures have had on the risk level once again using a risk matrix to calculate the Residual Risk Rating ,which must be as low as reasonably practicable (ALARP) and finally communicating the hazards, residual risks, risk reduction/control measures etc to the workforce. In the form of a SWMS/ SWP.

Please refer to item 9 at the beginning of this document for details regarding the submission of Risk Assessments and the approval process.

The PC and its appointed competent person will be responsible for the evaluation and approval of HIRA's developed by their appointed Sub-Contractors and must be as a minimum of the same standard as required by the CHSA. If at the time of an Audit or any other time being present on site, it is found that HIRA's and/or SWMS/SWP used by Sub-Contractors are of a sub-standard level the CHSR will issue instructions to cease work which is applicable to such sub- standard RA's and/or SWMS until amended to a satisfactory level.

The PC must ensure that all persons who could be negatively affected by hazards and risks associated with construction operations are informed and trained according to the hazards and risks and are conversant with the Safe Work Procedures, control measures and other related rules.

If the CHSR identifies alternative hazardous activities or risks for which a Risk Assessment was not performed or was not identified as part of a Risk Assessment Process, the PC will be required to implement corrective measures before being permitted to continue with work. **It must be noted that although the CHSR may approve RAMS, the responsibility rest with the PC as the employer in terms of Sec 8 of the Act to ensure the correctness of such RAMS and the required mitigation measures etc.**

10.27.	Hazards and Potentially Hazardous Situations

The PC must immediately notify other Sub-Contractors and/or occupants of the site where work is being conducted of any hazardous or potentially hazardous situations that may arise during performance of construction activities.

Should a hazardous situation require work stoppages, the work must be stopped, and corrective steps taken such as the conducting of new RA's, amending RA's the development of new SWMS, amendment of existing SWMS's, barricading, signage etc.

10.28.	Health and Safety Audits, Monitoring, Reporting and Statistics

The CHSR shall strive to at least once a month or at closer intervals as determined necessary for the duration of the contract conduct Health and Safety Audits of the work operations. The audit shall be consisting of a detailed audit of physical site activities and administration of Health and Safety. Copies of the audit reports will be forwarded to the Project Leader and the PC within seven working days. Copies of the Audit report must be kept in the SSHSF. The CHSR may at any time visit the site for an Audit without prior notification to the contractor.

The CHSO must conduct monthly Self-Audits including all the sub-contractors on site at the time of the audit as approved at the time of the SSHSP approval. The results of the Self Audits must be made available to all members of the project team at least 7 days before the following progress meeting. At the progress

meeting the CHSO must report on his finding and closing out of deviations.

Issues such as injury and incident records e.g., Near misses, First Aid, Medical Cases, and the Disabling Injury Frequency Rates must be included in the audit report. Copies of self-audit reports must be kept is the SSHSF.

10.29.	Health and Safety Disciplinary Procedure

The PC is responsible for maintaining discipline on site in terms of his employees, sub-contractor employees and visitors. In line with this requirement, the PC will be required to have a documented Disciplinary Procedure, which must be communicated to all persons working on site. Where a breach of a Site Health & Safety Rule or The PC's Safety Procedure is identified, the Contractor must ensure that disciplinary action is initiated against such contravening Persons/s in accordance with the documented procedure. Dependent on the nature of the breach and the nature of such presence on site, the process as outlined below could be used:

- First breach – verbal warning/counselling
- Second breach – written warning/counselling
- Third breach - appropriate disciplinary action taken such as Suspension Without Pay/Termination of Service, penalties etc.

All disciplinary steps taken in terms of OHS such as NCR's issued must be included in the PC's monthly, SHE Audit report submitted to the CHSR and other team members.

10.30	Health and Safety Management Information Notice Board

The PC must provide a Safety Management Information Notice Boards (SMI boards) as a minimum near the site office and if possible, in other areas e.g., eating and changing areas, with the following information posted:

- Supervisors Photos and Contact details.
- First Aider Photo and Contact detail.
- Valid, completed DSTI/S for the day's activities.
- Emergency Procedure.
- Any other information as required by the CHSR.

10.31.	Health and Safety Organogram

An organogram outlining the Health and Safety Management Structure as per appointments under the OHS Act and the Regulations must be included in the SSHSP and kept in the SSHSF. The Organogram must also be displayed in the Site Office.

Any changes to the appointments as per the approved Organogram must result in the Organogram being revised. All previous organograms must be kept in the SSHSF and not be discarded. The initials and Surname of appointees. Including the description of their appointment must be reflected on the Organogram.

10.32.	Health and Safety Plan and Submission

The PC must submit a detailed SSHSP based on this document known as the SSHSS. The contents of the SSHSP can be found under Annexure C of this document. Note must be taken of the required documentation which needs to be submitted as part of the SSHSP.

Failure to submit the required documentation as required by Annexure C, may result in a delay of the SSHSP approval process. When submitting the SSHSP to the Client/or its duly appointed representative the PC's CHSO must contact the CHSR appointed to this project, who's contact details can be found under the heading "Item 5.3: The Project Team" to arrange a sit-down meeting to discuss the PC's SSHSP to work towards approving the SSHSP. **It must be noted that no evaluation or approval of the PC's SSHSP will take place without engaging with the CHSO.**

10.33.	Health and Safety Policy

The Safety, Health and Environment Policy signed by the Chief Executive Officer must form a part of the SSHSP. The policy must outline Health and Safety objectives and set out how they will be achieved and implemented during construction.

The Policy must in addition to being part of the SSHSP and being kept on the SSHSF also be communicated to all employees, copies of such communication must be kept on the SSHSF. A copy of the Health and Safety Policy but must also be displayed in the Site Office.

10.34.	Health and Safety Training

The PC must ensure that all site personnel and Visitors attend a site-specific health and safety induction training session before starting work or being permitted entrance onto the site.

Employee Induction training must also include training on the risks associated with the works to be executed, method statements (SWP's) and emergency procedures. Visitor Induction training must include.

items such as site safety and health risks, steps to follow in the event of emergency, restricted areas and on the site and health and safety rules.

A record of attendance reflecting the signature of all training must be kept in the SSHSF. Employees and Visitors must carry proof of induction training whilst being on site, which may be a nametag or sticker, displayed on a hardhat. The PC must ensure that none of his employees, or sub-contractor employees, including transport and delivery Contractors entering the site delivering materials and/or equipment, may proceed to enter the Site or any operations area until they have received all training required under applicable laws and regulations, including, but not limited to, work activity inductions and Site-specific induction etc.

Induction Training is generally valid for 1 year, but should the contents of the training previously rendered change then follow up training must be rendered irrespective of the fact that induction training may still be valid.

The PC must prepare and present to all its employees its own Contractors Induction training, explaining the PC's SSHSP, Rules, the obligations imposed by the Occupational Health and Safety Act and Regulations, as well as a Site Specific Induction, which must as a minimum consist of an introductory briefing explaining the nature of the work, the general hazards which may be encountered during the operation, and the particular hazards attached to their own function within the site.

10.35.	Heat Stress and Sun Protection

The PC must ensure compliance with the OHS Act- Environmental Regulations 2(4). Heat stress can form part of many work activities associated with construction work. Where work is of a physical nature, and/or is conducted in excessive ambient or radiant temperatures the PC must implement measures such as rest breaks, provision of adequate amounts of water, scheduling work to coincide with cooler times during the day such as in the mornings and late in the afternoons.

Workers who are exposed to excessive ambient or radiant temperatures can suffer from a lack of ability to concentrate with resultant injuries becoming a probability.

The PC must ensure that all personnel are protected from excessive sunlight exposure by means of the use of long sleeve shirts, long trousers, brims to safety helmets, UV factored sunscreen and shade structures etc.

10.36.	High Voltage Equipment and installations

In the event where the presence or location of High Voltage Equipment such as underground cables are not known with a high level of certainty, the PC must ensure that the necessary precautionary steps are taken such as the manual digging of pilot holes, use of detection equipment, lock out and isolation at sources, use of insulated tools and equipment etc.

Where work must be conducted in the presence or below overhead lines issues such as the correct lifting of conductive materials, keeping of safe distances to prevent flash over etc must be documented and communicated to employees. No isolation, termination of services may take place without the

documented permission of the Electrical Engineer and the issue of an appropriate permit, which will include the necessary lockout, tagging and testing by an appointed competent person.

No unauthorised person may in any way interfere with or switch off any high voltage or critical electrical supply.

10.37.	Housekeeping

The PC must implement and ensure compliance with the requirements of Construction Reg. 27.

The PC must ensure that all work areas are kept in a neat and tidy state, free of debris and rubbish, at all times. Unless otherwise directed, the PC must dispose of all debris, rubbish, spoil, and hazardous waste off site in a designated and authorised area or facility.

The PC must keep in mind that poor housekeeping does not only contribute to the creation of an unsafe working environment but also a poor image of the project and its management, as well as the department as the client. In the event where housekeeping standards are not maintained or implemented the CHSR may issue instructions to cease, work until housekeeping is of an acceptable standard without the Client entertaining any extension of time claims or costs claims by the PC. **Keeping the site in a neat and orderly condition at all times is the sole responsibility of the PC.**

Regular safety/housekeeping inspections on an at least a weekly basis to ensure maintenance of satisfactory housekeeping standards must be conducted by the PC and the results of each inspection documented and the recorded. Records of such inspections to be kept on the SSHSF for viewing by the CHSR. The PC must ensure that all supervisory staff are made aware of their responsibility to monitor and manage housekeeping in their respective areas of responsibility.

DSTI's must make provisions for the checking that work areas are left in a neat and tidy fashion at the end of each shift. The CHSO must on a random basis after signing off on DSTI's at the end of shifts inspect such work areas to verify that such work areas are left in a neat and tidy condition. Should it be found that DSTI's are not a true reflection of the condition the work area was left in, the Supervisor must be engaged regarding the matter and if it is found to be a repeated situation, disciplinary measures must be implemented.

Waste disposal and general refuse disposal areas must be made available and barricaded off. The PC **MUST** ensure that refuse removal frequencies are in line with waste /refuse generation frequencies. If waste/refuse generation rates increase the removal frequencies must increase, no overflowing waste/refuse disposal areas will be tolerated.

Employees must, as part of the hazard communication process on DSTI's be made aware of the hazards and risks created due to poor housekeeping practises. Incidents of poor housekeeping practises and poor levels of supervisory enforcement of good housekeeping practises must be considered as part of offenses which may require steps to be followed as part of the PC's disciplinary process.

10.38.	Incident and Injury Management

The PC must implement and ensure compliance with OH&S Act - General Administrative Regulations 6 and 8. This section must be read in conjunction with item 10.1 Accident, Incident Investigation.

The PC must have in position prior to site establishment and have submitted with his SSHSP for approval by CHSR suitable /sufficiently documented accident/ incident reporting system/procedure that is following all applicable statutory requirements.

Any incident or "near miss" involving the PC or its subcontractor's or any third party's personnel, property, plant or equipment, must with immediate effect be verbally reported to the CHSR by the PC's CHSO whether or not injury to personnel or damage to property or equipment resulted from such incident or "near miss". The verbal reporting must be followed within 48 hours by a brief written report stating the known facts and conditions including a preliminary assessment of the most likely consequence potential of the incident in the circumstances, as well as the preventative measures to be implemented by the end of the shift. The abovementioned procedure does not exempt the PC from providing accident reports required by Statutory Authorities.

In the event of any serious incident resulting in a fatality, or permanent disability, the incident scene must be left untouched until witnessed by a representative of the SAP. This requirement does not mean that First Aid cannot be administered, or the scene be made safe. In the event where items or equipment have to be moved to assist in removing injured person/s photographs detailing the scene of the accident must be taken if possible before the scene is disturbed preclude immediate first aid being administered and the scene being made safe.

Names and contact details of witnesses to the accident must be taken by the CHSO or a SHE Representative delegated with such responsibility by the CHSO ASAP after arriving at the scene of the accident to assist in the accident investigation procedure.

Failure by the PC's SHE Officer to provide the CHSR with the abovementioned report within the specified timeframe as required will result in the Construction Manager (CR 8.1) being required to submit to the CHSR with a letter indicating the reasons as to the required report not being submitted as well as when the report will be submitted which may not exceed 72 hours from the time of the incident. Failure to comply with the abovementioned requirements at the discretion of the CHSR may result in instructions to cease work being issued until the detailed report as required has been submitted.

In the event where an injury has taken place such injury must be managed by ensuring that appropriate medical treatment is provided to ensure that the injured person has the opportunity as far as is reasonably practicable taking the injuries sustained into consideration to return to a level of good medical fitness and be able to resume his normal day to day activities whatever they may be.

The PC must ensure that suitably qualified medical persons/practitioners must treat all injured persons.

10.39.	Induction Training

Each employee and person wishing to enter the site must attend all mandatory Health and Safety Induction Training applicable to the project. No employee or visitor will be permitted to enter any project work site until he has attended this training. Each employee and visitor must carry proof that he has completed the induction training and may be removed from site if such proof cannot be produced on request.

All visitors must receive a visitor induction briefing before entering any project work site. However, this induction does not permit a visitor to enter a site unescorted.

Visitors must be always accompanied by an appropriately senior employee who has been fully inducted.

10.40.	Ladders, Portable

The PC must comply with OH&S Act - General Safety Regulation 13A. PC to ensure that:

- All ladders used on the site is constructed and used in compliance with the OH&S Act and Regulations.
- Ladders, which provide access to a working platform, must extend at least one meter above the platform where it provides access, and is secured to prevent slipping.
- Timber ladders must not be painted other than with clear preserving oils, clear varnishes etc.
- Damaged ladders must be removed from the work area, tagged unsafe and removed from site.
- All ladders must be tagged with a clearly visible tag or numbered which is recommended to be positioned below the second rung from the top, logged in a register and inspected by a competent person.
- All portable ladders when in use must be held by an assistant or properly tied down.
- All persons using ladders must be trained in the correct, safe use of ladders.

10.41.	Lighting

The PC must implement and comply with OH&S Act – Environmental Regulations, Schedule E of the Regulation.

The PC must ensure where natural lighting is inadequate to provide workers with a safe working environment. Lighting issues must be addressed by providing artificial lighting in all work areas and walkways.

Portable lights must be of a robust construction have adequate stability and be fitted with a mechanical guard to protect the lamp. No makeshift lights such as overhead florescent tube type of lighting may be positioned on floors or leaned against walls. Cables and plugs must be in a good condition and properly routed, preferably overhead to prevent tripping hazards.

Where work activities include wet processes cables and lights must be suitable to be used in such in wet environments. All lighting must be electrically safe for use in terms of their construction, cables etc.

It must be kept in mind that where lighting is of the “plug in” and “Plug out” type it is classified as Portable Electrical Equipment and must be accordingly numbered, inspected, and recorded on a Portable Electrical Equipment Register.

In the event where night work will be conducted Illumination checks must be performed to ensure conformance to minimum lighting requirements and the provision of emergency lighting must be addressed in the event of power failures.

10.42.	Lifting Machines and Tackle.

The Principal Contractor and Sub-Contractors must ensure that lifting machinery and tackle is inspected before use and thereafter in accordance with the Driven Machinery Regulations as published in Government Notice No. R. 298 dated 26 February 1988 and CR 22.

The PC must take note of the following and apply it as a minimum standard, where it is not possible to meet the standards listed below the CHSR must be engaged regarding the issue.

Each contractor carrying out lifting operations on the project site must develop, document and implement Method Statements (SWP) Procedures that are aligned with the requirements of this standard.

Design, Manufacturing and Safety Features

An Equipment Profile (dossier) must be compiled for each crane. A copy must be kept in the cab of the crane and must be kept current.

As a minimum, the design and manufacturing of each crane or hoist used on the project premises must comply with the requirements of the relevant ISO standard or national standards, implementing the most stringent standards.

The Safe Working Load (SWL) must be clearly indicated on each crane, hoist, and item of lifting tackle.
If the safe working load (rated capacity) of a crane varies with the conditions of use (i.e. varies with the angle of the boom and the boom length) then the manufacturer’s load chart(s) indicating the crane’s rated capacity at various boom lengths and angles must be available in the crane cabin. If the crane has a single load chart, it must be displayed in a position visible to the crane operator. If the crane has numerous load charts, they must be easily accessible to the operator.

For each crane or hoist, the manufacturer’s operating manual must be available to the operator. The load chart(s) and operating manual for a crane or hoist must be in a language understood by the operator.
All lifting hooks must be fitted with a safety latch to prevent the load from accidentally detaching.

Each crane or hoist must be fitted with a load cell (with the mass of the load displayed in the visual range of the operator) and a load limiting device to prevent the crane or hoist from being operated outside of its safe working limits.

Where practicable, each crane must be equipped with an upper hoist limit switch (or anti two-block device) to prevent the hook block from colliding with the drum, and a lower hoist limit switch to prevent

the rope on the drum from unwinding completely. These systems must provide both a visual and an audible alarm to the operator.

Under no circumstances may any limit switch or warning device be bypassed, disconnected, or adjusted to lift a load higher (or to lower a load lower) than the respective switches allow. Limit switches MAY NOT be adjusted to stop the hoist at a particular height under normal operating conditions - these are safety devices, and as such, should not be used as operating tools. The same applies to lifting heavier loads.

For a vehicle-mounted crane, the operator control station must be in a position protected from swinging loads and from the crane jib.

A fall protection system must be provided for the assembly, dismantling, operation, maintenance and inspection of any crane where falling from height is identified as a hazard.

Each crane should be fitted with a stability monitoring device to prevent it from toppling over.

Only items of lifting tackle that have been designed and manufactured with adequate factors of safety may be used on site. The following minimum factors of safety with respect to the Safe Working Load must be met:

Ten (10) for natural fibre ropes,
Six (6) for synthetic-fibre ropes or woven webbing; Six (6) for steel-wire ropes,
Five (5) for steel chains; and
Four (4) for high-tensile or alloy steel chains.

An excavator or tractor-loader-backhoe (TLB) may not be used to lift a load unless all of the requirements of this standard as would apply to a crane have been complied with and authorisation has been granted by the nominated project representative.

Planning and Risk Assessment

For each critical lift that must be carried out on site, a documented and detailed lift plan and risk assessment must be prepared to address all associated hazards. Only suitably qualified, competent, and experienced persons (lift planners) may evaluate critical lifts and prepare lift plans.

The lifting supervisor, crane operators, riggers and spotters responsible for carrying out a critical lift must have input into the lift plan and risk assessment and must be consulted before these documents are finalised. All lifting supervisors, crane operators must be appointed in writing. No critical lift may commence until the lift plan and risk assessment has been compiled and approved by the contractor.

Critical lifts include:

- All multiple (including dual) crane lifts.
- Lifts where the operational arcs of two or more cranes can overlap.
- Lifts over operating facilities where this may endanger personnel.
- Lifts carried out near power lines (over, under, or adjacent to).

- Any lift carried out in close proximity to equipment or a vessel containing a flammable or toxic substance.
- Any lift carried out near an embankment or an excavation.
- Lifts where the centre of gravity of the load could change.
- Any lift where the total weight on the hook exceeds 20 tonnes.
- Lifts near the rated capacity of the crane (i.e., exceeding 85% of the rated capacity at the working radius).
- Any lift when the wind speed (including gusting) exceeds 35 kilometres per hour (if a crane is not fitted with an anemometer, a handheld anemometer must be available).
- Lifts involving a man basket (safety cage).
- Lifts to and from water.
- Lifts requiring specialised equipment or involving complicated lifting or rigging configurations.
- Lifts requiring non-standard rigging or slinging techniques.
- Lifts involving the simultaneous use of more than one hoist on the same crane; and
- Any other lift deemed to be critical by the nominated project management representative or assessed as critical during a risk assessment.

The lift plan for a critical lift must include:

- General Information - crane manufacturer, crane model, items to be lifted, and reason for lift.
- Lift Data - load weight, lifting block and hook weight, hoist rope weight, rigging weight, total weight, height of lift, radius of lift, surface area of load, and centre of gravity of load.
- Rigging Data - sling material (chain, wire rope, or synthetic), sling diameter, sling length, sling configuration, sling capacity, hook type, shackle size and capacity.
- Lift Computation - boom length, jib length, radius of lift, crane capacity as configured, size of outrigger footplates, and wind speed.
- Proximity to Power Lines and Process Areas- mobile cranes working in proximity to energised power lines must operate under a Permit to Work, which must define exclusion zones and spotter duties.
- Local Hazards and Controls - including the route for the crane, ground stability, proximity of people or equipment, and agreed communication method; and
- Diagrams (sketches) a rigging diagram, and a crane set-up diagram illustrating the positioning of the crane(s) in relation to surrounding structures and the initial and final positions of the load (including crane boom movement).

The use of a crane-suspended man basket (safety cage) may only be considered when all other avenues to safely perform the work (e.g., scaffolding, mobile elevating work platform, etc.) have been exhausted. Cranes used to lift or suspend personnel must be approved as suitable for this purpose.

If a crane must be operated in proximity to energised overhead power lines (or any other exposed electrical conductors) then minimum clearance distances (specified by the electrical power utility or the nominated project management representative) must be observed. Whenever possible, power lines must be de-energised and isolated while lifting operations are carried out.

Operation

At the start of every day or shift, the operator of a crane or hoist must carry out a pre-operation safety check using a prescribed checklist. The specific requirements of the pre-operation safety check (and associated checklist) must be based on:

- A risk assessment that addresses all aspects of safe operation of the crane or hoist; and
- The inspection recommendations of the manufacturer.

As a minimum, the pre-operation safety check must include:

- A thorough visual inspection of all wire ropes, chains, hooks and safety latches, hook blocks, sheaves, hydraulic hoses, electrical cables, and the general condition of the crane or hoist.
- Checks to confirm the serviceability of the operating controls.
- Tests to confirm the correct operation of all limit switches, emergency shutdowns, load indicators, alarms and other safety devices; and
- A thorough visual inspection of all lifting tackle to be used.

The operator must:

- Check for any loose or missing parts.
- Make sure that the wire rope (or chain) of the hoist is properly seated in its drum and sheave grooves without any slack or overlapping.
- Operate each control to make sure it functions properly, releases immediately, and does not stick. Each control must be labelled to indicate its function.
- Listen for any unusual mechanical noises and look for any jerky movements while operating the crane and / or hoist several feet in each direction that it travels.
- Check the functionality of the upper and lower hoist limit switches (if applicable) by slowly raising and then lowering the block to trip the respective switches.
- Check all hooks. Hooks must not be cracked, stretched, bent, or twisted. Each hook must have a safety latch that automatically closes the throat of the hook. If the latch is bent, has a broken spring, or is otherwise damaged, it must be repaired before use. Hooks must rotate freely in the block assembly without any “grinding” felt or heard.
- Check the wire rope by lowering the block to its lowest level and looking for the following signs of damage:
- Reduced rope diameter. This may indicate that the rope has been stretched, has lost its inner core support, or has worn outside wires.
- Broken wire strands (any number).
- Kinked, crushed, cut, or “bird caged” wiring, or wiring with heat damage.
- Check all chains for damage including wear at contact points, cracks, or distorted links (bent, twisted, or stretched). All mechanical coupling links must be inspected to ensure that the linking pins are secure and in good condition. The capacity rating of each chain must be adequate for the load and the attachment method.
- Check the condition and capacity of wire rope and synthetic web slings. Capacity ratings must be legible on the manufacturer’s label. The capacity of the sling being used must be adequate for the load and the attachment method. A sling must be replaced immediately if it is excessively worn.

The operator must report any fault, defect, or damage to his supervisor immediately.

A crane or hoist must not be operated if any safety device is out of order or defective, or if any rope, chain, hook, or other component is worn or damaged.

Completed checklists must be made available (on request) for inspection by the nominated project management representative. Wherever possible, these checklists must be kept with the crane or hoist.

All lifting operations must be supervised by suitably qualified, competent, and experienced supervisors.

An effective method of communication between the crane operator and those assisting with the lift must be in place and documented.

Documented Method Statements (SWP) must be in place to ensure the following:

- Access into an area where lifting operations are being carried out must be restricted. Such an area (i.e., where there is a risk of a load falling and striking a person) must be barricaded and only authorized persons may enter (i.e. those directly involved with the lifting operations). Warning signage must be conspicuously displayed.
- Where a load is being moved from one location to another (i.e., the lifting operations are not being carried out in a discrete area that can be barricaded), measures must be taken to ensure that all persons in the path of the suspended load are made aware of the approaching hazard and that they move, and remain, well clear of it. All persons potentially affected must be given warning before the load is lifted.
- A lift must be directed and controlled by a single person (a suitably qualified, competent, and experienced rigger).
- Dedicated spotters (one or more, as determined during the risk assessment) must be in place during a lift to observe and provide warning (if necessary) to prevent incidents and ensure that safety protocols are adhered to.
- Before commencing with a lift, it must be verified that the load being lifted is both within the rated capacity of the crane (or hoist) and lifting tackle and within the limits set out in the lift plan and / or risk assessment. The rated load capacities of the crane, hoist, rope, chains, slings, or other components may never be exceeded.
- Only certified lifting tackle may be used to lift a load.
- No tackle that has been used for towing may be used for lifting operations.
- Only an approved material box (skip box) may be used for lifting loose items or materials.
- Before commencing with a lift, it must be verified that no safety devices (including load limiting devices) have been bypassed, overridden, or disconnected.
- To prevent the load from swinging as it is lifted, the hoist must be centered over the load (when using slings or chains) or positioned directly above the lifting point of the load.
- Hoisting ropes must be kept vertical. No side loading of a crane boom is permitted (i.e., a crane may not be used to make a side pull).
- Three full wraps of rope must always remain on the hoisting drum. If a lower hoist limit switch has been fitted, and it is working correctly, it should not be possible to lower the block below the point where less than three full wraps of rope are on the drum.
- Before commencing with a lift, it must be verified that all rigging connections are correct and secure. Slings, chains, or other lifting devices must be fully and securely seated in the saddle of the hook.

- Slack must be removed from the slings, chains and / or hoisting ropes before lifting the load. It must be ensured that multiple lines are not twisted around each other and that the hoist rope is not wrapped around the load.
- To ensure that the load is properly secured and balanced, it must initially only be lifted a few centimetres. Slings must be repositioned if required.
- Before moving a suspended load, it must be lifted high enough to clear all obstructions. The load must only be lifted to the height necessary to clear obstructions, and no higher.
- Directional movement must be made smoothly and deliberately (there must be no sudden acceleration or deceleration of the moving load). Abrupt, jerky movements of the load in any direction must be avoided.
- Tag lines must be used in situations where a load needs to be steadied or guided while suspended.
- When using tag lines to steady or guide a suspended load that is being moved using a crane, personnel on foot must always remain in sight of and in communication with the crane operator (through the rigger), must never walk between the crane and the load, and must always remain clear of the load and the crane (at least 5 metres). The load must be moved at a slow walking. speed.
- A suspended load must be always monitored closely.
- If a crane operator's view of a suspended load is unavoidably obscured (completely or partially), or if a suspended load is unavoidably obscuring (completely or partially) a crane operator's view, then suitably positioned spotters must be in place to provide guidance to the crane operator.
- A load MAY NOT be moved over, or be suspended above, any person or any occupied building. No person may walk beneath, or position himself below, a suspended load.
- No person may pass or work beneath the boom of a crane.
- No person may be positioned between a suspended load and a solid object where there is a risk of being crushed should the load swing.
- No person may be positioned within the radius of the boom of a crane unless directly involved with the lift.
- Under no circumstances may any person ride on a crane's hook or on a load.
- No load may be left suspended unless the operator is at the controls and is monitoring the load. In such a situation, the load must be kept as close as possible to the ground or floor to minimise the possibility of injury should the load drop.
- The controls of a crane or hoist may never be left unattended while a load is suspended. If it becomes necessary to leave the controls, the operator must lower the load to the ground or floor.
- No lifting may be carried out using a mobile crane unless the outriggers have been deployed and are locked in position.
- Load spreaders or packing under the outriggers must be used irrespective of the underfoot conditions.
- Before a mobile crane is moved into position to carry out a lift, the area must be inspected by a suitably qualified person who must verify that the underfoot conditions are satisfactory. If any uncertainty exists, DCP (Dynamic Cone Penetration) testing must be carried out. For critical lifts, ground compaction must be assessed using suitable instrumentation (e.g. Troxler).
- When using a mobile crane, slewing to test the effectiveness of the outriggers must be carried out prior to commencing with a lift.
- Under no circumstances may a mobile crane (or vehicle-mounted crane) travel with a suspended load.
- Slew pins must be securely in place while a mobile crane is travelling.
- Unauthorised use of a crane or hoist must be prevented by removing the keys, locking the cabin, isolating the controls, etc. when lifting operations have been completed.

- When not in use, lifting tackle must be stored off the ground and must be protected from the elements (rain, harsh sunlight, etc.) and contamination (dust, solvents and other chemicals) in order to prevent damage and / or deterioration.

A crane or hoist or an item of lifting tackle may only be used for the purposes for which it was designed.

Inspection, Testing and Maintenance

Any crane or hoist brought onto the project premises must have a current test certificate and record of inspection as well as a suitable checklist (derived from the crane or hoist manufacturer's inspection recommendations) for use by the operator(s) when carrying out pre-operation safety checks.

A register of all cranes, hoists and lifting tackle brought onto the project premises must be compiled and maintained.

Each crane, hoist and item of lifting tackle must have a unique identification code or number, which must be referenced in the register.

For each crane, hoist and item of lifting tackle, the following documentation must be kept on site and must be made available (on request) to the nominated project management representative for inspection:

- Test records and certificates.
- Inspection records.
- Maintenance records; and
- Details of any modifications or repairs made.

All cranes, hoists and lifting tackle must be inspected, tested, and confirmed fit for purpose (i.e. safe for use):

- Before being operated or put into service.
- Before being returned to service following any repair or modification; and
- Periodically as follows (unless local regulations require examination more frequently):
- Each crane or hoist (including all ropes, chains, hooks or other attaching devices, sheaves, brakes and safety devices that form an integral part of the crane or hoist) must be thoroughly examined by a competent, experienced person every 6 months.
- Each crane or hoist must be subjected to an annual performance test (i.e., load test) by a competent, experienced person; and
- All lifting tackle must be thoroughly inspected by a competent, experienced, and appointed person every 3 months.

The system of inspection and testing must provide verification that each crane or hoist is able to function to its design specifications, and must verify the integrity of:

- Mechanical and electrical components.
- Controls.
- Cables and all lifting attachments.

- Structural components including boom, hoist, brakes, wheels, hooks, baskets, out-riggers, hook-blocks and rails; and
- Load limiting devices, hoist limit switches, alarms or warning devices, and other safety devices and control systems (including independent fail-safe braking systems, devices to stop the crane or hoist such as a dead man's switch, and emergency shut-off switches).

A preventative maintenance system must be in place to ensure that all cranes and hoists are maintained in a safe and serviceable condition.

For any crane or hoist, all inspections, testing, maintenance, and repairs must, as a minimum, be carried out in compliance with the requirements and specifications of the manufacturer as well as all applicable regulatory requirements (in terms of both the frequency of inspection, testing and maintenance, and the physical condition of the crane or hoist).

Repairs to a crane or hoist may only be carried out by competent persons. After repairs have been made, the crane or hoist must be tested and recertified fit for purpose (unless the repairs did not affect the integrity of the lifting mechanism).

Any modification to a crane or hoist must be subject to the approval of the original equipment manufacturer and a rigorous change management process.

Each item of lifting tackle must be tagged following each quarterly (3-monthly) inspection. Details of these inspections must be recorded in the lifting tackle register which must be made available to the nominated project management representative on request.

The following colour coding system is recommended for the tagging of all lifting tackle:

Quarter	**Tag Colour**
January – March	**Blue**
April - June	**Red**
July - September	**Green**
October - December	**Yellow**

The tag placed on an item of lifting tackle must be traceable to an entry in the lifting tackle register where the following information concerning the inspection of that item of tackle must be recorded:

- Item description.
- Unique item identification code or number.
- Item owner.
- Item location.
- Date of inspection.
- Name and signature of competent person who carried out the inspection; and
- Any comments concerning the inspection.

Any item of lifting tackle that is found to be damaged or defective must be removed from service (and tagged, "Out of Service") immediately and must then either be repaired and recertified (if possible) or destroyed to prevent further use.

Similarly, any lifting tackle that is known (or is suspected) to have been overloaded must be removed from service immediately and destroyed to prevent further use.

If an item of lifting tackle is removed from service or destroyed (scrapped), this must be indicated in the lifting tackle register.

Any item of lifting tackle without a tag or with an out-of-date inspection may not be used.

Training and Competency

Only suitably trained, competent, and experienced persons are permitted to:

- Evaluate and plan critical lifts.
- Supervise lifting operations.
- Operate cranes and hoists.
- Use lifting tackle, and rig (sling) loads.
- Provide signals for controlling lifts; and
- Inspect, maintain, or test cranes, hoists and lifting tackle.

Each operator must meet the competency requirements for the particular class or type of crane or hoist to be operated. Depending on the project location and applicable legislation, operators may need to hold a certificate of competency issued by a recognised training institution.

10.43.	Manual handling of materials

The PC must ensure that no employees are required or permitted to lift or move by hand any object that is likely to create a risk of injuries being sustained by such employees. The shape weight etc of the items to be lifted must be considered and where required issues such as training in correct lifting methods, use of PPE use of alternative lifting methodologies must be considered.

Any handling or lifting task that can only be done manually must be planned and rehearsed before the task is done. If more than one person is involved in a task a communication procedure must be agreed in advance. Lowering the load must be done in a controlled manner. Dropping a load is dangerous and must be avoided.

As a guideline 25 kg is the limit of what a person can safely handle. Where there are loads exceeding 25 kg the risk of handling the load must be mitigated to assure minimal potential for any injury.

When mechanical lifting aids are provided, they should be used.

Extra care should be taken when lifting awkwardly shaped objects.

Position the feet correctly. The feet should be placed hip-width apart to provide a large base. One foot should be put forward and to the side of the object, which gives better balance.

Bend or ‘unlock’ the knees and crouch to the load. The weight will then be safely taken down the spine and the strong leg muscles will do the work.

Get a firm grip. The roots of the fingers and the palm of the hand should grip the load. This keeps the load under control and permits it to be distributed more evenly.

The following should be considered with conducting the Risk Assessment with regards Manual Handling and take into consideration the task factors, physical demands and tools involved in the task:

- Load weight / frequency.
- Hand distance from lower back.
- Asymmetrical trunk / load.
- Postural constraints.
- Grip on the load.
- Floor surface.
- Environmental factors.
- Carry distance.
- Obstacles in route the load must be carried.

Team Manual Handling:

- Load weight.
- Hand distance from lower back.
- Vertical lift region.
- Trunk twisting / sideways bending.
- Postural constraints.
- Grip on the load.
- Floor surface.
- Environmental factors.
- Communication, co-ordination, and control.

11.44.	Maintenance

All equipment and structures on site, whether it is fixed or temporary must be maintained at intervals no longer than that recommended by the manufacturer, under a planned maintenance system to ensure the safety of personnel who are responsible for operating or using the equipment.

Proof of all current tests and maintenance certificates relating to cranes, lifting beams, pulley blocks, lifting gear and slings must be kept on site in the SSHSF and be available for inspection by any person authorized to do so.

10.45.	Medical Fitness/ Fitness for work

The PC must ensure compliance with CR 7(1) (g) and that all his personnel as well as those of Sub-Contractors appointed by him are healthy and medically fit for their respective assignments and keep proof of such medical fitness on the SSHSF. The PC must ensure that all persons required to have a certificate of medical fitness must be in possession of such certificates prior to being permitted to assume their duties on site. Should employees be found on site without a valid medical fitness

certificate at the time of the CHSR conducting an audit, such employee must be removed from site and the CHSR may at his discretion issue instructions to cease work.

All medicals to include the Annexure 3 form as per the Construction Regulations 2014 signed and stamped by the occupational medical practitioner. The PC must ensure that only suitably qualified occupational health practitioners' issue medical certificates.

Should a worker's scope of work change, or he be required to work outside the scope of work for which his medical certificate has been issued, he may not be permitted to do such work until an updated medical fitness certificate has been issued.

The PC must develop and implement a programme to manage employee fitness for work for all employees working on the project. Working hours must be managed in compliance with applicable legislation. An exit medical from a previous project or site must not be deemed as a valid medical.

The medical examinations carried out for all drivers and operators must include testing and assessment for medical conditions that could affect the safe operation of vehicles or equipment. Specific testing and questioning must be carried out to determine if an individual:

- Suffers from epilepsy or any other medical condition deemed to be a risk by the occupational medical practitioner.
- Makes use of chronic medication that could affect performance
- Is colour-blind.
- Has poor day or night vision.

The medical examinations carried out for employees that are required to work at height must include testing and questioning to determine if an individual suffers from epilepsy, hypertension (high blood pressure) or any other medical condition deemed to be a risk (with regard to working at height) by the occupational medical practitioner.

10.46.	**Method Statements, Safety (SMS)/ Safe work procedures (SWP)**

SMS's/SWP must be in line with the associated Risk Assessments. The SMS's/SWP's must detail in a step- by- step and methodical manner on how the task is to be done from beginning to the end and must indicate what tools/equipment will be used at each stage and/or how the work area is to be accessed. The Task Items listed in the SMS's/SWP must tie up exactly with the task items being assessed in the Risk Assessment document.

Acceptance of a SMS by the CHSR does not relieve the PC of his responsibility for ensuring full compliance with SSHSS and any applicable legislation.

10.47.	Noise

The PC must implement and comply with OH&S Act - Environmental Regulation 7 and the Noise Induced Hearing Loss (NIHL) 2003 Regulations.

The PC must meet statutory requirements on limitation of noise emitted by machines and equipment. When personnel are required to operate such equipment, noise level exposure at the operator position must not exceed an equivalent level of 85-dB (A) or more during normal working conditions without the required mitigating measures being implemented.

Employees working in the vicinity must not be subjected to an equivalent continuous level of 85-dB (A) during normal operating conditions. The PC must comply with time periods and PPE requirements where applicable.

Consideration must be taken of the fact that the sound level at any works/site boundary caused by mobile equipment must not exceed the night time background level pre-existing the operation of the equipment. **At no time must the noise emission of the equipment or activities cause the sound level at the nearest residence, hospital ward or adjacent structure to exceed 40-dB (A).**

Sound levels must be measured in accordance with SANS 10083, with due allowance being made for tonal or impulsive components. A plot plan of project or plant must be drawn up to identify the measuring points with date, time, and frequency duration of measurement.

Symbolic safety signs, warning employees and visitors regarding the hazard of noise in the area, shall be erected at all entrances to the area and in a position where it must be clearly visible.

10.48.	Notices

If the PC receives any notice issued by any relevant Government Authority concerning Health and Safety, he must immediately upon receipt of such notice comply with the requirements of such notice. The PC must provide the CHSR with copies of any such notices, correspondence or directions of whatsoever nature issued by the abovementioned Government Authority concerning Health and Safety within 2 hours of the dispatch and/or receipt of such notice, correspondence, or direction.

10.49.	Notification of Construction Work/ Construction Permit

Notification of Construction Work

The PC must submit an Annexure 2, “Notification of Intention to Commence Construction Work” to the closest Department of Labour office, have it stamped provide the CHSR with a copy. A copy must be kept on the SSHSF for inspection purposes. Submitting a copy to the CHSR does not constitute permission to proceed with construction work.

Should construction work extend past the completion date reflected on the submitted Annexure A the PC must inform Department of Labour accordingly and file the amended Annexure A on the SSHSF.

It must be noted that no work of any nature may take place on site until permission to proceed with site Handover has been received from the Project Leader after receipt of letter from CHSR

10.50.	Occupational Hygiene (Personal Hygiene and infectious Disease Management)

The PC must ensure that its personnel and subcontractor's personnel is able to maintain and maintains high standards of hygiene, personal and in connection with the performance of the work. All work areas must be kept in a clean and tidy state. Waste disposal must be facilitated by providing sufficient waste collection receptacles and the correct disposal frequencies to prevent waste build up.

Employees must be trained on the contents of the Personal Hygiene and Infectious Disease Management Plan which must identify any anticipated hazardous biological agents which may be present in the work environment, trained in measures to protect themselves in terms of personal hygiene and provided with the necessary means to minimize the risk of contracting the harmful effects associated with such hazardous biological agents.

All Resting and Eating areas must be kept in a clean, tidy condition as well as being positioned away from contaminants and hazards. No eating and drinking may take place outside the designated eating or in office areas. Facilities for hand washing must be made easily accessible for persons to wash hands when leaving the construction area and entering the construction site offices.

10.51.	Personal Protective Equipment (PPE)

The PC must implement and comply with OH&S Act – General Safety Regulation 2. It must be kept in mind that PPE must only be the last resort in addressing risks. All Contractors' personnel on site and visitors, must always use the following minimum personal safety equipment which must be compliant with relevant SABS codes. Each item of PPE supplied for use on the project site(s) must be designed and manufactured in accordance with the relevant South African National Standard, ISO standard, or other recognised international standard.

Visitors (minimum PPE)

- Hard Hat,
- Reflective vest and
- Safety Boots.

If required due to on-site risks,

- Eye Protection,
- Hearing Protection,
- Respiratory Protection

No Visitor, regardless of title or position may be permitted to enter the construction site without the

minimum PPE which is a Hardhat, Reflective Vest and Safety Boots. Should the CHSR when present on site find any person without the minimum PPE he may issue instructions to cease construction work.

On site Workers.

- Suitable protective clothing (Overalls for all employees working on-site)
- Personnel exposed to noise levels exceeding 85dB (A), SANS 11451 approved hearing protection.
- Gloves, (Type appropriate to risks, or recommended by product manufacturers).
- Eye Protection/Face shields, (Appropriate to risks, or recommended by product/equipment manufacturers).
- Leather spats, (Appropriate to risks, or recommended by product/equipment manufacturers).
- Safety harnesses, (Where work is conducted from a Fall Risk Position).

Additional PPE requirements must be determined through hazard identification and risk assessment. This hazard-specific PPE (such as hand protection, hearing protection and respiratory protection) must be worn as required (e.g., when in a certain area, when performing a certain task, or when working with a certain substance).

The correct PPE must always be worn:

- In accordance with site requirements (as indicated at the entrances to a project site and at the entrances to buildings and/ or designated areas on the premises).
- In zoned areas (e.g., noise zones and respirator zones).
- As required by a Safe Work Procedure, a risk assessment, or a Material Safety Data Sheet (MSDS).

PPE must be provided to the employees by the PC and Contractor at no cost to the employee. Due to hygiene risks associated with interchanging PPE Site visitors wishing to gain access to the site must have their own personal PPE.

Should a worker not have the required PPE he may not be permitted to work. Employees must be trained in the correct use and how to take care of PPE. Supervisors need to as part of the Pre-Shift inspections when conducting DSTI's check that employees have the required PPE and that it is in a good condition.

If an item of PPE has worn out, has become damaged, or is found to be defective in any way, it must be replaced by the contractor. Employees must be provided with facilities which enable them to store their PPE e.g., lockers.

Employees who wear prescription spectacles (i.e., require corrective lenses) must make use of either:

- Prescription safety glasses (with permanent fixed side shields) that conform to the requirements of a recognised national or international standard (e.g., CSA, ANSI, or equivalent), or
- Over-spec safety glasses or goggles.

Any person who refuses to wear PPE as required must be removed from the site.

Symbolic signs indicating mandatory PPE requirements must be prominently displayed at the entrances to a project site and at the entrances to buildings and / or designated areas on the premises where additional PPE is required. These signs must comply with SANS 1186.

The PC must ensure the:

- Control the issuing and replacement of PPE.
- Maintenance of a register as proof that items of PPE have been issued to Individuals with signatures of receipt of PPE.
- Keeping of adequate quantities of replacement PPE on site.
- Carrying out of regular inspections to ensure that PPE is being used correctly, is being maintained in a good, serviceable, and hygienic state, and is not being shared between employees.

10.52.	**Plant and Machinery**

The PC must ensure that he controls **all plant and equipment entering and exiting the site**. Daily monitoring of all plant and equipment is required prior to commencing work, on issue and prior to use. A full list of hired and own plant must be available for inspection at each audit.

All daily inspection records are to be filed in the SSHSF and must not be more than one week behind. Only competent, medically fit plant operators must be permitted to operate plant. Medical certificates of fitness must be filled in the SSHSF. No unauthorized person may be permitted to operate or use plant.

Lifting equipment, plant or material that require annual load testing by an AIA, are to comply with the Driven Machinery Regulations (2015). Operators must be adequately trained and certified to operate mobile cranes or crane trucks. Certificates and registers are to be placed in the SSHSF.

Each contractor making use of plant and machinery on the project site must develop, document, and implement SWMS that will ensure the safe use and operation of such equipment.

For all plant and machinery, the following documentation must be kept in the Equipment Profile:

- Test records and certificates.
- Inspection records.
- Maintenance records; and
- Details of any modifications or repairs made.

10.53.	Planned Task Observations

PLANNED TASK OBSERVATIONS

All contractor and sub-contractor supervisors must perform Planned Task Observations (PTO's) to verify that the control measures that have been identified in SWMS's (and associated Risk Assessments) are being adhered to and are being properly implemented, and to provide guidance where deviations are noted.

Each supervisor must complete at least one PTO per day involving one or more employees in his work team.

When an unsafe act or condition is identified, the supervisor must coach the work team to correct the act or condition in line with the Safe Work Procedure.

Where valid changes to the work method are identified, the supervisor must ensure that the SWMS/SWP and Risk Assessment are updated to reflect the current practice.

10.54.	Pneumatically powered tools and equipment

Compressed air and associated tools may only be used when compliant with the OHS Act, DMR 14. Air to operate pneumatic tools may only be supplied from compressors or compressed air lines. No homemade compressors may be used on site. All airlines must be in a good working condition and fitted with suitable clamps to prevent accidental connection. Compressed air may not be used for general cleaning including the cleaning of overalls.

Pneumatic powered tools must only be driven by filtered compressed air with an in-line lubrication system or be lubricated prior to use if there is no in-line lubrication system. When using pneumatic powered tools, the designated tool pressure must be attained using a regulator.

Pneumatic powered tools must be disconnected when not in use. They must not be disconnected from the air supply until all the residual pressure has been released or contained by a shut-off device. Hoses must not be kinked as a means of containment.

Employees operating pneumatic powered tools, and any potentially affected employee in the vicinity of use, must wear suitable PPE.

All rotary compressed air tools (e.g., drills) must have the rated revolution per minute (RPM) permanently marked on the casing. Only attachments of compatible RPM must be used with these machines.

The actual RPM of the tool must be checked every three months to ensure that the speed is as rated by manufacturers specifications.

Pneumatic powered tools must be secured to the air supply hose by an approved positive means to prevent the tool from becoming accidentally disconnected. Safety clips or retainers must be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 kPa pressure at the tool, must have a safety device on the muzzle to prevent the tool from ejecting fasteners unless the muzzle is in contact with the work surface.

If an impact wrench is used, the sockets must be impact rated.

Compressed air must not be used for cleaning purposes except where reduced to less than 30 kPa, and then only with effective chip guarding and personal protective equipment in place. The 30 kPa requirement does not apply to concrete form, mill scale and similar cleaning purposes. Compressed air must not be pointed at any part of the body or used for cleaning clothing.

Airless spray guns of the type which atomize paints and fluids at high pressures must be equipped with automatic or visible manual safety devices which will prevent pulling of the trigger to prevent release of the paint or fluid until the safety device is manually released. A diffuser nut which will prevent high pressure, high velocity release while the nozzle tip is removed, plus a nozzle tip guard which will prevent the tip from coming into contact with the operator, or other equivalent protection must be provided in lieu of the above.

Abrasive cleaning nozzles must be equipped with an operating valve, which must be held open manually to enable operation. A support must be provided on which the nozzle may be mounted when it is not in use.

10.55.	**Portable Electrical Tools**

The PC to ensure compliance with EMR 10. PC to ensure safe Portable Electrical Equipment is used on site. The PC is required to inspect/have inspected by an appropriately qualified person all portable electrical equipment as follows:

- Supply cabling distribution boards, fixed lighting, and portable appliances on a monthly basis or more frequently if required by frequency of use.
- Extension leads, welding machines, compressors, pumps, and portable hand- tools on a weekly basis.

All sub-Contractor equipment must be inspected and tested at the same intervals as indicated above. The PC must implement a management system to ensure effective inspection and control over equipment such as a monthly colour coding tagging system. Tagging must be durable and be able to withstand the stressors associated with working in a construction environment.

A record book/register must be kept reflecting the following:

- Item unique number.
- Items inspected.
- Deviations identified.
- Signature Of Inspector.
- Date of inspection.

In addition to the abovementioned, the PC must ensure the following:

- That only trained authorized persons use the Tools.
- That equipment is inspected at the start and end of each shift and included in the DSTI.
- That damaged, unsafe equipment is removed from service, tagged unsafe for use until repaired and returned to service.

10.56.	Public Safety and Security

Hoarding/Fencing

The PC must hoard/enclose the construction site to prevent unauthorised entry and disruption to the site where required. The hoarding must be as follows:

- The hoarding/ enclosure must be at least **1.8-meter-high** and must enclose the entire parameter of the site.
- It must be constructed of a material, which must be able to prevent unauthorised persons from entering the site such as welded mesh/ diamond mesh and 80% shade cloth.
- A Lockable gate must be at least 1.8 meters in height as well a security staff member to control access.
- Hoarding parameters must be as per project's decanting plan.

Warning / informative signs

The entrance of the site must have easily visible construction safety warning signs posted which must contain as a minimum of the following information:

- Construction activities ahead/ Construction Site.
- No unauthorized entry.
- Different Types of Personal Protective Equipment required for the site as per risk assessments.
- Speed limit (10 km/h), unless otherwise stipulated.
- Visitors to report to the site office.
- Where applicable the Construction Permit Number issued by DEL.

Appropriate warning signs must also be posted in different locations of the site to create awareness of danger e.g., demolition in progress sign, required PPE and deep excavations signs etc.
Informative signs indicating the Emergency Assembly Point/s, location of fire extinguishing equipment and first aid equipment must be displayed where required.

Location of site office

The location of the site office should be in an area that will not require visitors to pass through or enter areas where construction work is active and will not require the re-location of the office as the project progresses. The location of the site office must be included in the Site Layout Plan submitted with the SSHSP.

10.57.	Risk Assessment of Plant and Equipment

The Pc must ensure that Risk assessments of plant and equipment is undertaken and documented before arrival at site, after major service, after modification, and before use in an unusual operating mode or conditions. The RA's must be undertaken by a suitably qualified and experienced person.

RA's for equipment mobilising to Site must be conducted prior to the equipment arriving on Site, and must consider, where applicable, potential for entanglement in moving parts, crushing or striking by moving or falling objects, cutting or stabbing by sharp objects, high pressure fluids, electrical shock or burns, burns from hot or cold surfaces, slips, trips and falls, ergonomic design of access and egress , seating, vibration, noise, exhaust fumes, etc.

The identification of hazards should consider normal operations, abnormal or unusual operations, breakdowns, and servicing operations. Particular attention must be given to fall protection attachment points when there is a requirement to work where a fall risk exists for activities such as repairs to equipment due to breakdowns. Where repairs to earthmoving equipment must take place on site the risk assessments must include provisions to deal with oil, diesel, and coolant spillages.

The PC must maintain all Plant and Equipment in good order and condition. Where equipment becomes inoperable due to breakdowns or other reasons and is being replaced by other equipment the same RA' requirements will be applicable to such replacement equipment.

The CHSR may inspect items of plant or equipment brought to site by the PC for use on site. Should the CHSR deem that it is inadequate, faulty, unsafe or in any other way unsuitable for the safe and satisfactory execution of the work for which it is intended, he must advise the Contractor in writing and the Contractor must forthwith remove or have repaired the item from the site and replace it with a safe and adequate substitute which does not entitle the PC to any additional claims or extension of time in respect of delays caused by the CHSR's instructions.

10.58.	Roof Work

The PC must ensure compliance with OH&S Act - General Safety Regulation 10. Safe access for gaining access on to roofs must be provided which can be ladders, scaffolding, man-cages, or elevated work platforms. Man-cages and elevated work platforms may only be used where scaffolding, and ladders is not suitable.

A lifeline, consisting of a steel wire rope, the diameter which has been calculated to suit the span and the number of persons attached to it must be erected on the ridge of the structure including the use of a mechanical device, e.g., turnbuckle, for tensioning the wire rope.

The lifeline to be erected/installed, must be recorded on register, and checked daily by a suitably qualified, competent, appointed person. Employees working on the roof must be clipped onto the lifeline via their safety harnesses. No work may be permitted during rain or windy conditions more than 30 kph.

Roof structures must not be overloaded with bundles of roofing materials. Only bundles for immediate use must be stacked onto the roof structure. Bundles must be sufficiently secured to the structure to prevent it from being blown away or falling off. No materials may be permitted to be stored on the roof structure over weekends or holidays.

10.59	**Safety meetings: Pre-start, Review etc.**

The PC must ensure compliance with OH&S Act, Section 19. Weekly Toolbox meetings must be conducted with employees. Topics for Toolbox Meetings must be pertinent to the site, equipment used, activities performed, SHE committee resolutions. Records of contents of Toolbox Meetings as well as attendance records must be kept on the SSHSF.

The PC must conduct at least one formal Health and Safety Meeting per month or at shorter intervals if required by the CHSR. Safety Representative Inspection reports contents must be discussed in addition to items such as Safety Statistics for the Month, PPE Issues, training requirements, CHSR Audit reports and results etc.

Daily Safe Task Instructions (DSTI) briefings must take place with each work team before the start of each shift. Hazards and risks as well as the required risk reduction measures must be communicated to workers. The Supervisor, CHSO and workers must sign the DSTI before work commences. At the end of the shift after the required close out check and singing, the DSTI's must be signed off and filed.

Weekly Safety Review Meetings of all safety related aspects of the week must be conducted. OHS must be a standing item on Planning and Progress Meeting Agenda's and attended by the CHSO.

10.60.	**SHE Representatives and Committees**

The PC and Sub-Contractors to comply with Section 16 and 17 of the Act by allowing for and ensuring that Health and Safety Representative(s) whom, after consultation, have been appointed and trained to carry out their functions.

The appointments must be in writing and the Health and Safety Representative must carry out regular inspections, keep records and report all findings to the CHSO. The CHSO must co-ordinate at least monthly H&S Committee meetings and attend all H&S committee meetings held by the Contractors. The CHSO shall further ensure that H&S is discussed at all internal production or progress meetings. Issues arising from the H&S committee meetings are to be discussed at internal meetings, as well as all H&S related issues, incidents, non-conformances, and penalties issued (if applicable).

Feedback to the CHS committee and close out of findings is imperative. Minutes of meetings must be kept for all H&S interventions and meetings. Minutes of meetings must be filed on the SSHSF.

10.61.	CHSO Roles and Responsibilities

The PC must ensure that the CHSO performs the following duties:

- Assist and co-ordinate the development of the SSHSP.
- Attend Project Planning Meetings.
- Assessment and approval of Sub-Contractors SSHSP's.
- Facilitation of Site HS Meetings.
- Identification of Hazards and risks relevant to the construction project through regular co-ordinated site inspections.
- Establish and maintain HS communication structures, systems, and distribution of HS specific documents to sub-contractors, compiling of project specific emergency preparedness documentation and supervising testing and evaluation of emergency preparedness plans.
- Conducting of induction training sessions.
- Evaluation of compliance by sub-contractors to project specific HS Plans and Client specification through inspections and audits.
- Overseeing the reporting and investigation of project related incidents.
- Overseeing the maintenance of all HS related records.
- Participation in management reviews of HS Systems.
- Draft and analysis of trend analysis to identify system deficiencies and incident trends, outline relevant improvements and incorporate changes into the HS management system.
- Reviewing and updating the SHE Plan.
- Ensuring that all staff, visitors, sub-contractors etc comply with the site rules and procedures.
- Ensure that no new workers or Contractors commences work without prior approval of their SSHSP or any other documentation as per required applicable legislative documentation.
- Ensuring that no work will be permitted to be performed without a valid RA and where required Method Statement as agreed with CHSR until such documentation has been approved by the CHSR.
- Any other duties as agreed between Construction Manager and/or CHSR.

The CHSO may not be removed or replaced without the approval of the CHSR, nor may the site be left unattended for more than 1 day without adequate, competent cover.

10.62.	Signage

The Pc must ensure that signage is posted on site as per site risks, legislative requirements e.g., General Safety Regulations or SANS, prohibiting entrance, specifying PPE requirements, location of First Aid Station and Fire Fighting Equipment etc. Signage must be noted on the site layout plan indicating where fixed/temporary signage is required.

Temporary electrical signage is to be included for the temporary electrical supplies. All rules or signage provided by the PC must to be adhered to. Where possible wording on signage must be in English and isiZulu.

11.63.	Site Clearance

Site Clearance activities will vary depending on the condition of the site in terms of it being overgrown, if trees must be removed if redundant materials must be removed from site etc. All site clearance activities irrespective of what it entails must be conducted under supervision and subjected to the Risk Assessment Process as well as the development of SMS's (SWP's).

Where the site is overgrown with vegetation, RA's must make provisions for the presence of snakes, poisonous vegetation, sharp objects, open trenches and excavations and insects. All tools, equipment vehicles and machinery must be in a safe working condition and operated by trained competent persons. Employees must be provided with the required PPE.

10.64.	Site Establishment

Site establishment can only be deemed complete when the site is enclosed, signage is posted, welfare facilities have been provided, containers have been placed etc. Upon site establishment being deemed as complete the PC must refer to the "Site Establishment Checklist" under item 12.6.1 which can be found under Annexures at the end of this document. Only once all items have been ticked as being present/completed can the PC proceed with other construction activities.

The checklist as indicated above must be signed by the CHSO and the CR8.1/CR8.7 and submitted to the CHSR. Should the CHSR upon conducting a site visit/audit and find that site establishment was not completed before commencing with other construction activities the CHSR may issue instructions to cease construction work until all outstanding items have been attended to.

10.65.	Site Layout Plan

The PC must ensure that a Site Layout Plan is developed and submitted with the SSHSP as indicated in Annexure C of this document. This document must indicate items such as Location of the Site Office, Laydown areas, Location of welfare facilities, Traffic routes, location of first aid and emergency equipment etc. After Site establishment and as the project progresses the plan must be updated if required and a copy provided to the CHSR. The Location Plan must be displayed at the entrance to the site as well as at the site office.

10.66.	Site Specific Health and Safety Rules

The PC must provide and ensure implementation and compliance with the following Site-Specific Health and Safety Rules and requirements:

- Safe Access and Egress to be provided to and from work areas.
- Good Housekeeping and Stacking Practices to be implemented and always maintained.

- Continuous cleaning to take place especially at the end of the shift and be recorded in DSTI “close out “Section.
- Safe and orderly routing of electrical cables and air hoses to prevent tripping of persons must be always enforced.
- Rigging Studies must be conducted for all heavy and/or difficult lifts.
- No lifting of loads in windy conditions exceeding 30 km/h depending on RA, Rigging Study, dimensions and weight of the load and lifting capability of the crane.
- Prohibition of certain activities in wet conditions e.g. un-shored excavations, use of portable electrical equipment, elevated work, roof work etc.
- Employees may not be transported on the back of a bakkie and or truck, unless fitted with a canopy and separated by means of a barrier from tools and equipment.
- All elevated work must include compulsory use of Lifelines (unless secured to an approved fixing point), Safety Harnesses & Fall Arrestors including a height rescue system and training of rescuers. To comply with SABS-EN –353-355,358,360-365,795,813&SABS033, 1833, 341,564-567,892,1891,12277 and 4878 -Fall Right SA standards or equivalent - always attached in elevated positions and use of double lanyards.
- Scaffolding must comply with SANS 10085 standards. Scaffold inspectors and Erectors may not be the same person. Access ladders must be erected on the inside of frames, staggered every 2 meters with a safe landing platform. Trapdoors must be provided on working platform. Scaffold must remain tagged “Unsafe for use” until certified “Safe for use”. If modified to be re-tagged “Unsafe for use: until certified ‘Safe for use”.
- Where required workbenches must be provided for onsite work.
- Barricading must be able to sustain loads imposed on it, should a fully grown person fall against it or lean against it, solid frame covered with orange netting to highlight presence.
- Tools and equipment used in working at heights to be secured by use of lanyards/Tool belts.
- Minimum PPE required to permit entry onto site: Safety boots, Hard Hat and Reflective Vest.
- When grinding, welding and gas cutting operations take place Shields and extinguishers must be used to contain sparks and control fire spread. Fire watchers to be posted whenever Hot Work is conducted.
- Guide ropes must be used whenever lifting operations are conducted.
- Flagmen must wear reflective vests.
- Heavy mobile plant and earth moving equipment must be fitted with rotating lights and operated with lights on and functional reverse hooters and/back up alarms.
- Concrete buckets to be fitted with safety Chains and opening wheels.
- All portable generators and welding machines with electrical outlet sockets must be fitted with earth leakage switches.
- All electrical items used in wet conditions must be fitted with waterproof caravan type plug fittings.
- No machinery e.g. grinder designed with guards may be operated without guards unless approved by CHSR.
- All Self- Propelled mobile machines must be fitted with Fire Extinguishers, Revolving Lights and Back-up and Reverse Hooters.
- All oxygen –acetylene cylinders must be fitted with Flashback Arrestors and proper, good condition hoses and clamps in a trolley equipped with a fire extinguisher.
- Supervision ratios between Foreman and workers not to exceed 1:15 ratio.
- Staff to always wear appropriate PPE with sufficient replacements to being available.
- All employees on site to carry identification e.g. ID card reflecting the following information:
- Initials and surname.

- Designation.
- Company number.
- Name of Employer,
- and proof of induction, sticker on hardhat unless otherwise agreed with CHSR.

Welfare Facilities to:

- Be protected from environmental conditions such as rain, sun, and wind.
- Tables and Chairs to be provided in eating areas.
- Refuse bins for disposal of food containers and food scraps.
- Hand washing facilities.
- Portable toilets 1:10 ratio.
- Separate male and female toilets with doors that can be locked from the inside.
- Running water, soap, and toilet paper to be always available at toilets.
- All facilities to be always kept in neat hygienic condition.

10.67.	Smoking on site

The PC may not permit any person to smoke on site unless in designated area, which has clearly been identified by means of signage being posted indicating it as the designated smoking area which has been selected in accordance with applicable legislative requirements. Applicable receptacles must be provided for the disposal of cigarettes buts to ensure good housekeeping standards are maintained and prevent accidental fires being started.

10.68.	Speed Restrictions and Protections

The maximum speed limit on site shall be limited to 10 km/h unless otherwise agreed upon with the CHSR. Vehicle movement routes on site must be clearly indicated where applicable and indicated on the Site Layout Plan.

Signage to ensure the safe movement of vehicles on site, as well as to ensure the health and safety of all employees and visitors on site, must be displayed in strategic locations.

10.69.	Stacking and Storage of Materials

The PC must ensure compliance with CR 28 and General Safety Regulations 8. Stacking and Storage must take place under the supervision of an appointed competent person.

Storage areas must be designated, kept neat and under control. Inspections of stacking and storage areas must be done and recorded on a register which must be kept on the SSHSF. Adequate stacking, storage and lay down areas must be provided on site. If unauthorized persons can enter an area where materials are stacked, such area must be barricaded off to prevent access to such area. Stacks should not exceed the height to width ratio of 3:1.

Hazardous chemical substances must be stored in dry storeroom as per the specifications of their material safety data sheets.

No materials may be stored outside the site perimeter, unless agreed to in writing with the CHSR and Project Leader.

10.70.	Structures and Temporary Works

The Principal Contractor must ensure that the provisions of CR 11 & 12 are adhered to.

A Competent Temporary Works Designer must be appointed as per CR 12(1). All temporary works must be erected under the supervision of the appointed Temporary Works Supervisor who will be responsible to certify that the structure is suitable to withstand the loads imposed on it when concrete is poured. No concrete may be poured until authorised to do so by the Temporary Works Supervisor in writing.

All temporary works structures must be inspected by the Temporary Works Supervisor/s after concrete pouring and thereafter daily until the concrete has cured. Temporary works materials or sections may only be removed or dismantled upon receiving authorisation from the appointed Temporary Works Supervisor in conjunction with the Structural Engineer. Records of all inspections and authorisation to dismantle temporary works materials must be kept in the SSHSF.

10.71.	Sub-Contractors

All Sub – Contractors shall be responsible for their own Health and Safety on site. The PC shall sign Section 37(2) mandatory agreements with the Sub – Contractors for the works, which stipulate the arrangements and procedures to ensure compliance by the Sub-Contractor and his/her employees with the requirements of the OHS Act, Act 85 of 1993, CR and the SSHSS.

All subcontractors must have their own SSHSP applicable to the scope of work they will be performing on site, which has been approved in writing by the PC's CHSO. Records of such approval letters must be kept on the PC's as well as the Sub-Contractors SSHSF.

The PC **may not** permit any Sub-Contractor to start working on site without his SSHSP being approved.
The PC's failure to ensure compliance with any of the abovementioned and to monitor Sub – Contractor's compliance on site may be seen as failure by the PC to enforce good SHE Practises,
Compliance with the Act, CR and this SSHSS and may result in the CHSR issuing instructions to cease work.

10.72.	Transportation of Workers

The PC and Sub-Contractors shall not:

- Transport persons together with goods or tools unless there is an appropriate area or section of the vehicle separated/partitioned off from the area where workers are seated in which to store such goods or tools.
- Transport persons on the back of trucks except if a proper canopy (properly covering the sides and top) has been provided with suitable seating areas.
- Permit workers to stand or sit on the edge of the transporting vehicle.
- Transport workers in light duty vehicle (LDV) unless they are closed / covered and have the correct number of seats for the passengers.
- No driver may transport more than six people on the back of a 1-Ton LDV and more than four passengers on the back of a ½-Ton LDV.
- The driver of any LDV may not permit more than two passengers to occupy the cab of any LDV. Drivers of such vehicles must have a valid driver's license for the code of vehicle being driven by them.

10.73.	Trespassing

The PC and his employees may not trespass on any land/area outside the limits of the site, as indicated at the time of Site Handover, and must communicate such requirement to his sub-contractors. The PC must ensure that all fences are maintained during the Contract.

The PC and his employees are required to work only in the specified construction areas and access to these areas is only by specified routes. Should access routes change due to work related issues on site such routes with applicable restrictions must be communicated to the employees. Changes in routes must go with the required barricading and signage to prevent unauthorised persons from using such routes to access the site where such routes may enable unauthorised persons from entering the site,

Where changes in routes may have a negative impact on the day-to-day functions of persons other than that of the PC such changes in routes must take place in consultation with such affected parties.

10.74	Toolbox Talks

The contractor must prepare a Toolbox Talk on a weekly basis and must share it with all personnel for which the contractor is responsible (including all sub-contractors). Toolbox Talks must address health and safety issues that are relevant to the work performed on the project site and must include information and / or knowledge sharing, lessons learnt from incidents that have occurred, information concerning specific hazards and / or risks and control measures to prevent injury, etc.

Attendance records must be kept and maintained in the contractor's SSHSF.

10.75.	Vehicles and Traffic Management

The PC must ensure compliance with OHS Act- Construction Regulations 23 and that all vehicles entering the site, moving around on the site, parked on site, and exiting the site does so in a safe manner. In addition to the abovementioned, the following must be adhered to:

- Vehicles parked outside the site area must be parked in such a way as to not obstruct the movement of public vehicles nor put the public in danger in any way.
- Contractor's vehicle drivers must comply with all safety direction and speed signs.
- Drivers must ensure that vehicle loads are properly secured before setting the vehicle in motion.
- The Contractor must only permit the authorized, necessary number of vehicles on site.
- Traffic rules and signs such as speed signs; stop signs must be always obeyed.
- No vehicles may be left with the engine running or the keys in the ignition.
- Warning signage must be posted on the outside of site entrances of the site to make road users aware of vehicles entering or exiting the site.

10.76.	Ventilation

The PC must implement and comply with OH&S Act - Environmental Regulation 5. Any activity/task, which generates excessive dust such floor sanding, or fumes, such as welding where natural ventilation is not sufficient to ensure the provision of a safe working environment must include the use of an exhaust extraction system. Care must be taken to ensure that outlets of exhaust extraction system do not pose a risk to the health and safety of other persons on or outside the site or contaminate other ventilation system intakes.

10.77.	Vibration

As far as is reasonably practicable, exposure to vibration must be eliminated. However, if this is not possible, short-term solutions to decrease exposure include:

- Reducing the vibration levels.
- Removing the person from the vibrating equipment / tools.
- Reducing the period that the person works with the vibrating equipment e.g., at least 40 minutes break after 20 minutes working with a machine that vibrates excessively.

To reduce exposure to vibration:

- Consider buying equipment that operates effectively at lower speeds.
- Buy equipment with built-in damping materials.
- Buy lighter tools if they are available - they require less of a grip.
- Maintain the equipment.
- Make sure equipment is balanced and there are no worn parts.
- Use remote controls when they are available.

- Workers must be informed to reduce their grip on the equipment when it is safe. The less time they have their hands on the equipment the better. They need to relax their hands during these brief breaks.

10.78.	Visitors to Site

The PC must ensure that all Visitors to the site are subjected to a site-specific safety induction training session prior to being allowed access to site. Visitors are required to conform to the Site PPE requirements and should arrive at site with the appropriate PPE, with the minimum being safety boots/shoes, hard hat and a vest.

Visitors must not be permitted to roam around on site without being accompanied by a representative of the PC, so as to make them aware of on-site hazards, risks, No-Go areas etc.

10.79	Waste Management

The PC must ensure that a Waste Management Plan must be developed which must be submitted with the SSHSP as indicated in Annexure C. It must be kept in mind that a site with areas overflowing with waste creates health hazards, attracts rodents and a poor image of the company.

Sufficient receptacles and designated stored areas must be provided which must be cleared frequently. Consideration must be taken of the types of waste generated and where required waste separation must form part of the Waste Management Plan. Environmentally hazardous waste such as empty paint tins, fluorescent light fittings, asbestos etc must be disposed of in line with applicable legislative requirements.

10.80.	Water Management

The PC must keep in mind that South Africa is a country with limited water resources. Water may only be obtained on site, as per contract stipulations. The PC may not make unauthorised water connections. Where water is brought onto site by means of water tankers the PC must ensure that the water is suitable for its intended use.

The PC must communicate to all workers the importance of water conservation and management. Run-off water from washing and cleaning activities must be managed in a controlled manner to not create areas where water becomes stagnant contributing to the creation of areas for mosquitos to breed. Run-off water must also not contribute to the creation of slippery surfaces. It is recommended that taps are of the press-button type to reduce water wastage.

No hazardous substances such as paints, oils etc may be disposed of into drains, and sewers.

10.81.	Welding, Grinding, Cutting etc.

The PC must comply with the requirements of the OHS Act-Construction Regulation 29. The Pc must also ensure the following:

- That all equipment used is in a safe working condition.
- That Hot Work Permits have been issued by the appointed Competent Person.
- That where required the necessary screens have been erected to protect against harmful rays and sparks.
- The presence of close proximity fire extinguishing equipment.
- Dampening down takes place where required.

10.82.	Welfare Facilities

The PC must implement and comply with Construction Regulation 30. PC to ensure:

- Sufficient chemical ablution facilities on site where connection to existing sewer system is not possible.
- Separate facilities must be provided for males and females with gender signs posted at entrance or on door.
- Ablutions must be serviced weekly as a minimum.
- Safe drinking water must be provided to employees.
- Safe, clean storage areas for workers personal belongings and clothing to be provided.

10.83.	Working at Heights

The PC must implement and comply with OH&S Act - General Safety Regulation 6 & Construction Regulation 10. **Note:**
The following must be implemented in conjunction with the requirements for Elevated Work and the Fall Protection Plan as covered earlier in this document:

- If personnel are required to work in any area, which is not guarded, which has a fall risk, either above or below ground, fall protection equipment must be provided and utilised by the personnel. Fall protection includes Safety harnesses and double lanyards with the correct hooks, approved lifelines, or other approved means.
- All harnesses must comply with SABS/EN/EC Standards and must be in a" good state", inspected using a comprehensive inspection checklist, and "in-date" as per manufacturing guideline.
- All persons working in a fall risk position, e.g., scaffolding, formwork/false work, support work, roof work, etc. must be trained for working at heights with a minimum of an Accredited Fall Arrest Course compliant to applicable SAQA Unit Standards.
- The supervisor of the work relating to the fall risk area must be trained at a minimum level of a SAQA Accredited Fall Arrest and Basic Rescue Course.

- A Rescue Kit (Contents of the Rescue Kit as per the Fall Protection Plan, and as determined by the type of working from a fall risk position that is being conducted on site) must be always available on site.
- The site must have at least one Accredited Fall Arrest Rescue Co-Coordinator on site who will co-ordinate the rescue operation.

11.0	Annexure B: Baseline Risk Assessment

Please note that this is a Baseline Risk Assessment, Contractor to perform detailed Issue Based and Continuous Risk Assessments in the sequence of the activities anticipated of being performed.

Project:	**FORTNAPER HOSPITAL: REFIRBISHMENT OF THE EXISTING SUBSTATION MV ROOM AND SWITCH GEAR HOUSE** WIMS No: - 073636

REF N0	073636	**RISK ASSESSOR**	PM XABA	REVISION	1	**DATE**	**02 May /2025**

Likelihood		**Consequence**	
Rare	**1**	**Negligible**	**1**
Unlikely	**2**	**Minor**	**2**
Possible	**3**	**Moderate**	**3**
Likely	**4**	**Major**	**4**
Almost certain	**5**	**Severe**	**5**

RISK = LIKELYHOOD X CONSEQUENCE

RISK RANKING	
Score	**RANKING**
0-5	**1**
6-10	**2**
11-16	**3**
17-20	**4**
21-25	**5**

MAIN ACTIVITY	**SITE ESTABLISHMENT**

Ref Nr	**Activity**	**Potential Hazard**	**Potential Risk**	**S**	**H**	**E**	**Pure Risk**	**Mitigation Measures**	**Residual Risk**	**Risk Ranking**
1.1.	Vehicles accessing and exiting the site	1. Vehicles can run out of control due to mechanical	1.Collisions with pedestrians, buildings, other	X	X		4x5=20	Vehicle Maintenance records plus pre-trip inspection to be available	2x5=10	2

		failure etc. 2. Medically unfit operator. 3. Load falling off vehicle. 4. Incompetent operator. 5. Vehicle leaking fuel and oil.	vehicles. 2. Medically unfit operator could cause collisions, death, injury etc. 3. Striking persons, other vehicles, or structures etc. 4. Incompetence can lead to collisions, death, injury etc. 5. Contamination of natural resources, roadway damage etc.					before permitting vehicle on site. Medical fitness certificate to be available before site Load securing must be inspected before trip and before entering the site etc. Driver proof of competence before entrance to site etc. Maintenance records, pre- trip inspections etc.		
1.2.	Offloading of materials Manually	1. Sharp Edges 2. Incorrect Lifting methods 3. Hands caught between surfaces. 4. Flammable substances 5. Spillage of fuel	1. Cuts to hands etc. 2. Back strain, injury 3. Bruising, Fractures 4. Fires, Explosions Burns etc. 5. Contamination of Soil etc.	X	X		3x3=9	Use of hand protection. Training in correct lifting methods. Awareness training etc Storage in correct sealed containers. Storage in correct sealed containers etc.	2x1=2	1
1.3.	Clearing Vegetation	1. Use of Brush Cutters by incompetent operators. 2. Use of slashers by incompetent users	1.Contact with high speed, sharp edges resulting in cuts and lacerations. 2.Sharp edges resulting in cuts	X	X		3x4=12	Training of operators. Training of users. Snake awareness training and treatment facility identified. Use of gloves, Pre-cut	2x2=4	1

		3. Venomous snakes and poisonous insects 4. Sharp objects 5. Flammable substances 6. Spillages	3. Respiratory failure, organ failure, death etc. 4. Cuts, infections 5. Fire, explosions, Burns etc 6. Contamination of soil etc.					Checks. Use of approved Containers. Training in correct re-fueling procedures etc.		
1.4.	Placement of Containers	1. Defective lifting equipment can fail when used. 2. Uncontrolled movement of Load. 3. Persons under suspended load. 4. Incorrect placement of containers. Temperatures.	1. Load can detach strike persons, damage container. 2. Load can strike persons or property etc. 3. Load can crush Persons etc. 4. Re-positioning of load=re-exposure to risks etc.	X	X		3x5=15	Load test certificates for lifting equipment. Use of guide ropes. Barricading lifting zone. Competent Supervision. Planning site Office area layout beforehand etc.	2x2=4	1
1.5.	Erecting fencing/Barricading/Hoarding	1. Manual Handling of material. 2. Material may have sharp edges 3. Persons/limbs being struck with tools/items. 4. Unknown location	1. Physical exertion and muscular strain. 2. Cuts to hands, skin penetrations 3. Bruising, fractures 4. Accidental contact with electricity/water	X	X		3x3=9	Training in correct lifting methods. Use of correct hand protection. etc. Training and Competent supervision etc.	1x1=1	1

		of underground services. 5. Hot environmental temperatures, etc.	supplies etc.					Reference to drawings, use of detection equipment etc. Adequate water supplies, use of sunscreen creams etc.		
1.6.	Stacking and Storage	1. Collapse of Stack. 2. Incorrect dismantling of stacks. 3. Incorrect storage of Flammable materials 4. Incorrect storage of HCS.	1.Collapsing material may injure persons, cause tripping hazards. 2. Stacks collapse and cause hand or feet injuries 3. Exposure to sun or ignition sources with risk of fire or explosion etc. 4. Chemicals can react to others or environmental factors with risk of fire or explosion etc	X	X		3x3=9	Inspection of stacks, use of checklist, supervision. Training, Supervision. Supervision, close proximity fire extinguishers, signage. Reference to MSDS's, Supervision etc.	1x1=1	1
1.7.	Temporary Service Connections	1. No information available to ensure safe termination for	1. Contact with energy sources, resulting in burns, death.	X	X		4x4=16	Obtain drawings, engage with designer on required	2x2=4	1

		connection to energy sources. 2. Poor quality connections, exposed wiring etc.	2.Accidental contact with energized systems etc					information, use of testing equipment. Survey condition, use of testing equipment, use of required PPE etc		
	TOTALS		PURE RISK				90	RESIDUAL RISK	26	
MAIN ACTIVITY	**SCAFFOLD, SCREEN, BARRICADING SIGNAGE ETC. ERECTION (preparation for working on the roof)**									
Ref Nr 2	**Activity**	**Potential Hazard**	**Potential Risk**	**S**	**H**	**E**	**Pure Risk**	**Mitigation Measures**	**Residual Risk**	**Risk Ranking**
2.1.	Collection and placement of materials	1. Struck by 2. Sharp edges, 3 Physical exertion, 4. Manual handling etc.	1. Abrasions 2.Cuts 3.Muscular strain 4. Starin and sprain etc.	X	X		4x5=20	HIRA, Competent Supervision and Management, Insulated tools ,Lock out, testing and tagging , permit issue, PPE etc.	2x3=6	2
2.2.	Erection of scaffolding structure/s and hoarding	1.Falls from height, dropping of items 2. Sharp edges, 3.Scaffolding collapse, 4.Struck by falling items, etc.	1. Back strain, Fractures 2. Cuts 3.Risk of falling from height sustains fractures or death. 4.Abrasions, Fractures, death, etc.	X	X		5x4=20	Competent person to erect and Supervision of scaffolding. Use of scaffolding. Checklist, etc	3x2=6	2

2.3.	Erection of barricading	1. Hidden services 2. Physical exertion, 3. Struck by sharp edges etc.	1. Electrocution 2. Muscular strain 3. Cuts, Abrasions, Fractures, etc.	X	X		4x4=16	Scaffold to be securely tied to the structure. Use only scaffold is a 'Safe to use' sign is displayed.	3x3=9	2
2.4.	Fitment of signages	1. Physical exertion, 2. Sharp edges etc.	1. Muscular strain, 2. Cuts etc.	X	X		2 x2=4	HIRA, Supervision, PPE, Safe Systems of work etc.	1 x1=1	1
	TOTALS		PURE RISK				60	RESIDUL RISK	22	

MAIN ACTIVITY	Removal of main Medium Voltage Switchgear									
Ref Nr 3	**Activity**	**Potential Hazard**	**Potential Risk**	**S**	**H**	**E**	**Pure Risk**	**Mitigation Measures**	**Residual Risk**	**Risk Ranking**
3.1.	Working in a live environment	Electrocution, untrained worker, electrical shocks, inclement weather; no use of proper ppe, Incompetent workers, lack of communication, no lock out/ tag out, live electricity, no risk assessment	Electrocution, burns, musculoskeletal, cuts, abrasions, heat exhaustion etc	X	X		5x5=25	HIRA, Competent Supervision, Only competent person to disconnect switches, training, Proper PPE, keep serviced fire extinguisher nearer, Safe systems of work, good housekeeping, Clear Safety signage's; etc	3x5=15	3

3.2	Disconnection of electricity supply/ switches,(Isolation, Disconnection and Removal)	Electrocution, untrained worker, electrical shocks, inclement weather; no use of proper ppe, Incompetent workers, lack of communication, no lock out/ tag out, live electricity, no risk assessment conducted, no use of proper ppe, heat, no proper switching, poor isolation; interruption of operations eg, aircons, medical equipment, chillers etc;	Electrocution, burns, musculoskeletal, cuts, abrasions, heat exhaustion etc	X	X		5x4=20	Competent Supervison Safe systems of work Tools and equipment Inspections. Isolate, Competent personnel' medical fitness certificates. Continuous housekeeping signage. Barricading, Training and PPE. LOTO; Safe Ladders; Competent person to erect scaffolding; Drink lots of fluids etc	3x2=6	2

3.3	Testing of the substation earthing	Incompetent worker, no risk assessment performed, live electricity, no use of ppe, inclement weather changes etc	Electrocution, burns, musculoskeletal, cuts, abrasions, heat exhaustion etc	X	X		4x3=12	Competent Supervision,Induction, PPE, Training; Appoint competent contractor, Isolations, LOTO, , safe systems of work; drink lots of fluid etc	4x2=8	2

3.4	Temporary shutdown	Incompetent worker, poor communication, interruption of some hospital activities, poor backup, inclement weather changes, etc	Electrocution, burns, musculoskeletal, cuts, abrasions, heat exhaustion etc	X	X		5x3=15	Competent Supervisor Safe systems of work Tools and equipment Inspections. Competent operators' medical fitness certificates. Continuous housekeeping signage. Barricading, Training and PPE. Drink lots of fluids etc	3x2=6	2
3.5.	Removal of MV Switchgear (oil immersed MV switch and Main LV Panel)	Incompetent workers, lack of communication, no lock out/ tag out, live electricity, no risk assessment conducted, no use of proper ppe, heated oil leakage, illegal disposal of oil, disturbance of	Poor housekeeping, land contamination due to oil leaks	X	X	X	5x4=20	Competent Supervision,Training, PPE, Only competent personnel to remove transformer, Spill Kit should be in place, Proper Isolations, Lock out-Tag out systems, safe systems of work, proper supervision, conduct risk assessment prior to the commencement of the job,	3x1=3	1

		operations, falling objects, confined space etc						spilled oil must be disposed at an approved disposal site, limited time in confined space, safety culture/attitude be instilled etc		
3.6.	Rigging	Poor Rigging, falling objects, damage to property, fall onto personnel, Equipment failure, Incompetent operator noise etc.	Serious injuries, fatalities, etc	X	X	X	4x5=20	Load testing, proper rigging, proper supervision, safe systems of work, Proof of competence, Annual Inspections ppe etc	3x2=6	1

3.7	Handling/ lifting of MV Switchgear	incorrect lifting; Falling of a transformer, spillages from transformer, no oil spill kit on site, no risk assessment, lack of communication, damage to equipment, hit by transformer, sharp objects, bump against areas etc	Serious injuries, fatalities, musculoskeletal	X	X	X	5x5=25	Competent Supervision,Training, PPE, toolbox talks, risk assessment, load testing. Safe systems of work, proper supervision etc	3x3=9	2
3.8	Banging of objects, drilling etc	Working in noise area, poor communication, inclement weather, no use of proper ppe eg, ear muffs etc	Noise induced Hearing loss, injuries, heat exhaustion etc	X	X		4x5=20	Proper supervision, use of ppe, training,Noize exposure time limitation etc	3x5=15	2
3.9	Working with hazardous materials	Untrained worker, no risk assessment communicated, no use of proper ppe; Spillages from Hazardous materials, noise, limited space etc	Ingestion , Absorption, Inhalation fatalities, injuries etc	X	X	X	4x5=20	Risk Assessment, Training, Proper PPE, competent operators, safe systems of work, load testing, proper supervision, leaks tray, oil spillage kit must be kept on site; etc	3x5=15	2

3.10	Lifting machinery/ moving machinery to transport MV switchgear	No traffic control, faulty moving machinery eg cranes, poor rigging; incompetent operator, noise, workers not wearing visible clothing ie reflector vest, faulty lifting machinery, no load testing, unforeseen leaks from the transformer, sharp edges, lifting heavy objects, no risk assessment, lack of communication etc	Heat exhaustion, injuries, hit by moving machinery, musculoskeletal disorders, fatalities, abrasions, permanent back injuries etc	X	X	X	4x5=20	Competent Supervision,Risk Assessment, Training, Proper PPE, competent operators, safe systems of work, load testing, proper supervision, leaks tray, oil spillage kit must be kept on site; etc	3x5=15	2
3.11	Disposal of existing switchgear	No proper waste management plan, unauthorised disposal site, poor housekeeping, spillages etc	Environmental contamination etc	X	X	X	4X5=20	Waste Management Plan must be in place and be implemented, good housekeeping, PPE, training, proper supervision, safe systems of work, spillage kit, risk assessment , approved disposal dump site etc	3X4=12	2
	TOTALS		**PURE RISK**				**217**	**RESIDUAL RISK**	**110**	

MAIN ACTIVITY	INSTALLATION OF A NEW MV SWITCHGEAR								
Ref Nr	**ACTIVITY**	**Potential Hazard**	**Potential Risk**	**S**	**H**	**E**	**PURE RISK**	**MITIGATION MEASURES**	**Residual Risk**	**Residual Ranking**
4.1	Handling of a MV SWITCHGEAR	Incorrect lifting, lifting of heavy object, hit by a transformer, bump against areas, sharp objects, lack of communication, untrained worker etc	Permanent back injuries, abrasions, cuts, musculoskeletal disorders	x	x		3x3=9	Training, PPE, Competent supervision, safe systems of work, proper communication, use lifting equipment instead of manpower, load testing, service lifting equipment, proper rigging etc	3x1=3	1
4.2	Installation of a new MV SWITCHGEAR	Live electricity, connecting switches, cabling, burns, incompetent worker, lack of communication, excessive noise, poor housekeeping, no risk assessment; bump against areas, limited space, banging, chasing, dust, inclement weather etc	Electrical shock, heat exhaustion, musculoskeletal, injuries etc	x	x		3x4=12	HIRA, , Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc	2x3=6	2

4.3 **SUBSTATION A**	Carry out investigation and testing of the substation earthing (Sub Station A)	Incompetent worker, poor communication, no isolations, faulty testing equipments; Struck by Items, Hands Caught in between areas, Falling objects, Sharp edges,	Injuries due to work being performed by incompetent personnel, electrical shocks etc	X	X		3x3=9	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc.	2x1=2	1
4.4	Replace MV switchgear with vacuum bottle type for arc suppression	Unaccredited supplier, incompetent worker, no risk assessment; Hands caught in between areas, no use of ppe etc	Injuries due to work being performed by incompetent personnel and or faulty material,	x	X		3x2=6	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, PPE eg googles; gloves; masks ;Medical Fitness	3x1=3	1
4.5	Install wall mounted MV Schematic	Incompetent worker, poor communication, noise, dust, no use of PPE, etc	Injuries due to work being performed by incompetent personnel, electrical shocks, hearing impaired due to noise and due to no use of ppe, lung infection, heat stroke, etc	X	X		4X4=16	Competent worker to do the job, toolbox talks, induction, Trainings, PPE, proper supervision etc	3X3=9	2
4.6	Confined Space	Heat, poor air circulation, noise, dust, weather changes etc	heat exhaustion, breathing difficulties, hearing impaired, lung infection etc	X	X		3X2=6	spend limited time in confined space, proper supervision, PPE, training, drink lots of fluid etc	2X2=4	1

Sub Station B 4.7	Carry out investigation and testing of the substation earthing	Incompetent person to conduct investigations and testing of substation earthing, no induction, no risk assessment, no isolations, no use correct tools to do testing, inclement weather changes etc	Injuries due to work being performed by incompetent personnel, electrical shocks, etc	x	x		3x3=9	HIRA, Competent person to do testing , Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc	3x1=3	1
4.8	Install MV schematic on the inside door to the RMU	Incompetent worker, faulty tools, no induction, poor communication, no induction, no use of PPE etc	Injuries due to work being performed by incompetent personnel, electrical shocks, etc assessment ; Loss of hearing due to excessive noise and not using PPE eg Ear plugs etc Injuries = Not using PPE	x	x		4x4=16	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, Risk Assessment; training. PPE etc	2x3=6	2
4.9	Waste Management	1.No waste management plan 2.No Appointment for a Housekeeping Supervisor, 3.Poor Housekeeping on site 4.Dust etc	1.Debris pilling up poses risk to workers. 2. Injuries will occur on site, 3. Trips, Falls, Lung infections etc 4. Lung infection etc	x	x		4x4=16	Training, PPE, Appoint Waste Management Supervisor; Waste Management Plan to be in place, Keep up with good housekeeping etc	2x4=8	2
4.10 Miniature Sub Station C	**Working on SUB C –**	Bushy area, Weeded site, snake bites, mosquitos, dangerous insects; unforeseen holes, uneven surfaces, dust, inclement weather changes etc	injuries, death, skin irritation, lung infection etc	x	x		5x5=25	Training, PPE, Appoint Waste Management Supervisor; prune the bushes; Waste Management Plan to be in place, Keep up with	3x2=6	2

								good housekeeping, always on a look out etc		
4.11	Replacement of the full miniature substation including vacuum bottle type RMU	Wrong supplier, ,incompetent worker, carrying of heavy objects, use of faulty tools, noise, dust, No induction, no risk assessment etc	Injuries due to work being performed by incompetent personnel and cheap products/material, musculoskeletal, hearing impaired, lung infection etc	X	X		4x5=20	Materials to be procured from an approved supplier, PPE, Training, Proper supervision etc	2x4=8	2
4.12	Moving vehicles and pedestrians	Poor traffic control, no risk assessment, no induction, car collapsing on people, untrained worker, etc	injuries due to car crashed, death, etc	X	X		4x5=20	Traffic management plan to be presented, flag man, induction, clear signages etc	2x4=8	2
4.13 **Mini Substation D**	Working close to parking lot	Poor traffic control, no risk assessment, no induction, vehicles colliding with workers, untrained worker, etc	Injuries due to vehicle collisions, death, etc	X	X		4x4=16	Traffic management plan to be implemented, relocation of vehicle parking bays, flag man, induction, clear signages etc	2x4=8	2
4.14	oil gas analysis test on existing transformer	poor handling of oil, oil leakages, no use of ppe, illegal disposal of oil, untrained worker etc	inhaling of hazardous chemicals, skin irritation, etc	X	X		3x3=9	Training, PPE, Authorised oil disposal site, proper supervision, Spill Kit	3X2=6	2
4.15	Carry out investigation and testing of the substation earthing	Incompetent person to conduct investigations and testing of substation earthing, no induction, no risk assessment, no proper isolations, no use of correct tools to do testing, inclement	Injuries due to work being performed by incompetent personnel, electrical shocks, etc	X	X		3X3=9	Only competent person to do testings, correct tools to be used, Training, PPE, induction, toolbox talks, proper supervision etc	2X2=4	1

		weather changes etc								
4.16	Install MV schematic on the inside door to the RMU	Incompetent worker, faulty tools, no induction, poor communication, no induction, no use of PPE	injuries due to work being performed by incompetent personnel, electrical shocks, etc	X	X		3X2=6	Competent person, proof of competency, training, PPE, Proper supervision, Tools to be serviced and properly maintained etc	2x4=8	2
4.17	Replacement of miniature substation	untrained worker, no use of PPE, unaccredited supplier, handling of heavy objects, poor isolations, faulty lifting equipment etc	Injuries, abrasions, cuts, musculoskeletal etc	X	X		3X2=6	Trainings, use of PPE, approved supplier, induction, MSDS, lock out tag out, proper supervision etc	3x1=3	1
4.18	Housekeeping	No waste management plan procedures, sharp objects, Dust etc	Dust inhalation, Injuries etc	x	x		3x2=6	Waste Management Plan to be in place, appoint housekeeping supervisor, PPE , Training etc	2x2=4	1
TOTAL			**PURE RISK**				**207**	**RESIDUAL RISK**	**99**	

MAIN ACTIVITY	MINOR ELECTRICAL WORK									
Ref Nr 5	**Activity**	**Potential Hazard**	**Potential Risk**	**S**	**H**	**E**	**Pure Risk**	**Mitigation Measures**	**Residual Risk**	**Risk Ranking**
5.1.	Working in a live environment	Incompetent worker, No isolation procedures In place. Not displaying applicable tags ie Tag in / Tag out	Electrical shocks, Burns, Injuries etc	X	X		3x5=15	Provide proper applicable signages, Training of workforce on	1x2=2	1
5.2.	Isolation, disconnection, and removal of equipment.	1. Electrocution 2. Struck by tools 3. Sharp edges, etc	1. Burns / electric shock 2. Bruising, fractures 3. Cuts, etc.	X	X		4 x5 =20	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc. Provide isolation and lock-out facilities and keys controlled by competent personnel.	3x3=9	2

5.3	Mini substation handling and lifting of equipment	1. Electrocution 2. Struck by tools 3. Sharp edges 4. Abrasive surfaces 5. Poor working posture etc.	1. Burns 2. Bruising, fractures 3. Cuts 4. Abrasions 5. Muscular strain, etc.	X	X		5x5 = 25	Licensed crane operators to be utilised to carry out this task.	3x3=9	2
5.4	Working at heights.	1. Falls, 2. Struck by tools. 3. Hands caught between, 4. Poor working posture, etc.	1. Back strain, Fracture 2. Bruising, Cuts, 3. Abrasions, fractures 4. Muscular strain, etc.	X	X		5x5 = 25	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc. All personnel working at heights to have safety harness and strapped to a secure structure etc	3x3=9	2

		4.Noise, 5. Flying particles etc.	loss etc.					of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc.		
5.5	Electrical shocks and arc flashes while using electrical equipment	1.Electricity	1. Electrical shocks & burns.	X	X		3x3=9	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections. Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc	2x3=6	2
5.6	Distribution board handling and lifting of the equipment.	1. Electricity 2. Sharp edges 3. Abrasion surface 4. Dust inhalation 5. Bumping against 6. Struck by flying items, etc.	1.Electrocution, 2.Cuts 3.Abrasions, 4.Dust inhalation 5.Bruising 6.Fractures, etc.	X	X		3x3=9	HIRA, Competent Electrician , Competent Supervision, safe systems of work. Tools and equipment inspections. Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc	2x3=6	2

5.7	Installation of short circuits, electrical arcs, or hot components.	1. Electricity 2. Wrong full connections 3. Sharp edges, 4. Physical exertion 5. Poor working posture etc	1. Electrocution, death 2. Accidental tripping of essential supplies 3. Cuts 4. Muscular strain, 5. etc	X	X		4x5=20	HIRA, Competent Management, Competent Supervision, safe systems of work, Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, barricading, training. PPE	3x3=9	2
5.8	Working in confined spaces (e.g., in ducts, tunnels, or crawl spaces) can pose risks such as limited oxygen, and restricted movement.	1. Working in confined spaces.	1. Oxygen constrain, noxious gas fumes, fire, etc.	X	X		4x5=20	HIRA, Competent Management, Competent Supervision, safe systems of work, Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, barricading, training. PPE. Conduct a confined space entry assessment and implement control measures. Ensure works are trained in confined space entry protocols. Have emergency rescue procedures in place.	3x3=9	2
5.9	Installation of covers for equipment such as wireways, junction boxes, cable trays.	1. Struck by tools 2. Sharp objects 3. Caught between	1. Fractures 2. Cuts, 3. Bruising, fracture	x			3x3=9	HIRA, Competent Management, Competent	2x2=4	1

		4. Trips & falls 5.Electric shock; etc.	4.Fractures, Abrasions 5.Electrocution; etc.					Electrician, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc.		
5.10	Fitting of cables	1.Working from elevated position. 2.Electricity. 3. Manual handling, 4. Repetitive motion. 5. Sharp edges 6.Physical exertion etc.	1.Fractures or death. 2.Electrocution 3.Muscular strain 4.Tendinitis 5.Cuts 6.	X	X		3x3=9	HIRA, tag and lock, Method Statements, Safe work Procedures. , Use of Fall arrest equipment, Training, Competent Electrician etc.	2x3=6	2
5.11	Fitting of new DB Boards Switches, light fittings plug points and wiring, etc.	1.Elevated work 2.Physical exertion, 3.Incompetent operator 4.Unsafe Portable electrical tools, 5. Noise 6. Dust 7. Vibration 8.Manaul handling, etc.	1. Falls from height =fractures etc. 2.Tendinitis 3.Fractures, sprains as result of lack of control of machine by the incompetent operator. 4. Electrocution 5.Noise induced hearing loss. 6.Dust inhalation 7.White finger syndrome 8.Muscular strain, etc.	X	X		3x3=9	HIRA, Competent Electrician, Competent Supervision, safe systems of work. Tools and equipment inspections. Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc	1x2=2	1

		3. Unsafe Portable electrical tools, 4. Noise 5. Dust 6. Vibration etc.	2. Muscular strain 3. Electrocution 4. Noise induced hearing loss 5. Dust inhalation 6. White finger syndrome, etc.					Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc.		
5.12	Fitting of plug boxes, junction boxes, Distribution boards, power sockets etc	1. Untrained worker 2. No Risk Assessment performed 3. Dust, Noise 4. Sharp edges etc	1. Serious injuries, Respiratory infection, Noise induces hearing loss, Cuts, Abrasions etc	x	X		3x2=6	HIRA, Competent Electrician, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc.	2x1=2	1
5.13	Wiring	1. Faulty or damaged wiring, 2. Not performing LOTO, 3. Untrained worker, 4. Trip and fall due to trailing cables 5. Inhalation of fumes during soldering etc	1. Electrocution. 2. Serious injuries including electrical shock, Respiratory infection etc	x	X		3x2=6	HIRA, Competent Electrician, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc.	2x1=2	1
5.14	Extension cords	1. Poor Housekeeping 2. Trips, 3. Incompetent worker etc	1. Injuries etc	x	X		3x2=6	HIRA, Competent worker, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness	2x1=2	1

5.15	Fitting of fixtures/ Skirting	1. Abrasive surfaces 2. Poor working posture 3. Incorrect bending 4. Untrained worker, 5. Inclement weather changes ;	1. Abrasions 2. Muscular strain, etc. 3. Back injuries; 4. Injuries; cuts poor worker etc 5. Heat stroke, cold; flu etc	X	X		3x2=6	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc.	2x1=2	1
5.16	Connection of services	1. Poor communication 2. No LOTO in place. 3. Incompetent Worker 4. No Risk Assessment performed etc	1. Electrical shocks 2. Injuries etc	X	X		3x2=6	HIRA, Competent Electrician, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc.	2x1=2	1
	TOTALS		**PURE RISK**				**200**		**81**	

6.	MINOR BRICKWORK; PLASTERING; PAINTING AND WATERPROOFING									
6.1	**Activity**	**Potential Hazard**	**Potential Risk**	**S**	**H**	**E**	**PURE RISK**	**MITIGATION MEASURES**	**Residual Risk**	**Residual Ranking**
6.2	Minor brick work	1. Noise 2. Dust on site due to Construction. 3. Manual handling 4. Working in elevated position. 5. Physical exertion. 6. Abrasive surfaces 7. Cement Dust 8. HCS etc	1. Noise induced hearing loss. 2. Dust inhalation 3. Sprains and stains 4. Risk of falling from height sustain fractures or death. 5. Musculoskeletal injuries 6. Abrasions. 7. Lung infection. 8. Dermatitis, etc.	X	X		4x5=20	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc.	3x3=9	2
6.3	Plastering	1. Abrasive surfaces, 2. Poor working posture, 3. Hot climatic conditions, 4. Falls 5. Cement Dust, etc.	1. Abrasions, 2. Muscular strain, 3. Heat exhaustion, 4. Fracture and Death 5. Dermatitis, 5. Lung infection, etc.	X	X		3x4=12	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous	3x2=6	2

								housekeeping signage, training. PPE etc.		
6.4	Waterproofing	1. Open flame, gas cylinder, heated surfaces 2. Toxic Vapours 3. Physical exertion etc 4 Chemical exposure, lead poisoning, 4. Untrained worker etc.	1. Burns, scalding, explosion 2. Respiratory tract Irritation 3. Muscular strain, etc. 4. Dermatitis, etc.	X			4x3=12	Training, Supervision, equipment inspections. PPE, Training, Supervision. Regular breaks, Training etc	3x2=6	2
6.5	Painting	1. Repetitive motion 2.HCS 3.High environmental temperatures, etc.	1. Muscular Strain 2. Dermatitis 3. Heat exhaustion, etc.	X	X	X	3x2=6	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc.	1x1=1	1
			PURE RISK				**50**		**22**	

ACTIVITY	GENERAL SITE ACTIVITIES									
Ref Nr 7	**Activity**	**Potential Hazard**	**Potential Risk**	**S**	**H**	**E**	**Pure Risk**	**Mitigation Measures**	**Residual Risk**	**Risk Ranking**
7.1	Sweeping	1.Repetitive motion 2. Dust, 3. Excessive environmental temperatures etc.	1.Muscular strain, 2. Dust inhalation 3.Heat exhaustion etc.	X	X		2x3=6	Safe systems of work, training, PPE, Good Housekeeping Practices, Supervision; etc.	2x2=4	2
7.2.	Lifting and lowering	1.Heavy loads difficult to grasp items 2. Incorrect lifting methods, caught between etc.	1.Muscular strain, 2. lower back injuries, etc.	X	X		3x3=9	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc.	1x2=2	2

7.3	Removing damaged bricks	1. Dust 2. Noise 3. Faulty tools 4. Inclement weather changes eg heat, colds, Rains, wind etc	1. Lung infection 2. Loss of hearing 3. Injuries; cuts; abrasions etc 4. Heat stroke, colds. flu	x	x		4x4=16	Training; PPE; Competent worker, Drink lots of fluids etc	2x2=4	1
7.4	Painting	1. Poor working posture 2. Repetitive motion 3. Hazardous chemical substances, spillages etc.	1. Dermatitis 2. Muscular strain 3. etc.	x	X	X	3x3=9	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous	1x2=2	2
7.5.	Ladder work	1. Elevated position, 2. Incorrect positioning, 3. Poor location slippery surfaces etc.	1. Fractures 2. Death etc.	x	X		3x3=9	HIRA, Training, PPE, safe systems of work and supervision etc.	1x4=4	2
7.6.	Use of Portable Electrical equipment	1. Electricity, 2. Faulty equipment, 3. High speed rotating equipment, 4. Tripping 5. Vibration, 6. Noise etc.	1. Electrocution 2. Cuts, 3. Abrasions 4. Noise induced hearing loss etc.	x	X		2x3=6	Safe systems of work, training, PPE, Good Housekeeping Practices, Supervision; etc.	1x4=4	2

7.7.	Driving vehicles on site	1.Collisions 2. Flammable substances etc.	1. Fractures 2. Death, etc.	x	X		3x3=9	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc.	2x2=4	2
7.8.	Extension cords	1. Electricity 2. Tripping hazards	1. Electrocution, 2. Fractures etc	x	X		2x3=6	HIRA, Competent Management, Competent Supervision, safe systems of work. Tools and equipment inspections, Medical Fitness Certificates, continuous housekeeping signage, training. PPE etc.	1x2=2	2
7.9	Hand tools	1. Tripping 2. Struck by items 3. Bumping against, 4. Abrasions 5. Sharp edges 6. Caught between surfaces 7. Flying metal particles etc	1. Cuts 2.Bruising 3.Foreign material in eyes etc.	x	X		3x2=6	HIRA, Training, PPE, safe systems of work and supervision etc.	1x4=4	2
7.10	Scaffolding erection, dismantling	1. Falls from height, 2. Dropping of items, 3. Sharp edges, 4. Scaffolding collapse, etc	1. Back strain, 2. Bruising 3. Cuts 4. Broken bones, death etc.	x	X		3x2=6	Safe systems of work, training, PPE, Good Housekeeping Practices, Supervision; etc.	2x2=4	2

	TOTALS	PURE RISK				82		34	

11.1	OHS Risk Profile
Pure risk	
Residual Risk	

Item	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	+
1.Site Establishment – Vehicles accessing and exiting site																					
2.Scaffolding; Barricading ; signages																					
3. Removal of MV Switchgear																					
4. Installation of MV Switchgear																					
5.Minor Electrical work																					
6. Brickwork etc																					
7.General Site activities																					

12.	Annexures

12.1.	Annexure A: Contractors Health and Safety Declaration

CONTRACTORS HEALTH AND SAFETY DECLARATION FOR TENDERS

Project Name: FORT NAPIER HOSPITAL

WIMS Number: 073636

Client: HEALTH & DOPW

INTRODUCTION

In terms of Construction Regulation 5(1) (h) of the Construction Regulations of February 2014 a Contractor may only be appointed to perform construction work if the Client is satisfied that the Contractor has the necessary competencies and resources to carry out the work safely in accordance with the Occupational Health and Safety Act, Act 85 of 1993 and the Construction Regulations of February 2014. In line with this requirement the Contractor is required to read through this document carefully, sign it and submit it with his/her Tender.

DECLARATION

I the undersigned hereby declare and confirm that I am fully conversant with the Occupational Health and Safety Act, Act 85 of 1993, the Construction Regulations of February 2014 and the Site-Specific Health and Safety Specification attached in the tender document.

2. I hereby declare that my company and its employees has the necessary competency and resources to safely carry out the construction work under this contract in compliance with the Occupational Health and Safety Act, Act 85 of 1993, the Construction Regulations of February 2014 and the Construction Safety, Health and Environmental Specification.

3. I hereby confirm that adequate provisions has been made in my tender to cover the cost of all Safety, Health and Environmental duties and responsibilities imposed on me by the Occupational Health and Safety Act, Act 85 of 1993, the Construction Regulations of February 2014 and the Site-Specific Health and Safety Specification

4. I confirm that I may not commence with any part of construction work under the contract until the Client has approved my OH&S Plan in writing.

5. I hereby confirm that copies of the following documentation will be kept on site for viewing and inspection purposes for the duration of the construction work:

   a) Client's Site-Specific Health and Safety Specification

   b) Approved Construction Occupational Health and Safety Plan

   c) Occupational Health and Safety Act, Act 85 of 1993, and

d) Construction Regulations of February 2014.
e) Any other documentation as specified in the SSHSS or as required by the CHSR.

6. I agree that my failure to complete and execute this declaration to the satisfaction of the Client will mean that I am unable to comply with the requirements of the Occupational Health and Safety Act, Act 85 of 1993 and Construction Regulations 2014, and accept that my tender will be rejected.

Signature:…… **Date:……..**

(Person duly authorised to sign on behalf of Tender)

12.2.	**Annexure B: Structure of SSHSP submitted for approval and SSHSF layout requirement.**

Number	**Item**	**To be submitted with SSHSP for approval**	**Comments**
1.	INDEX	Yes	None
2.	SSHSP Approval Letter and Appointment letter.	No	To be filled in SSHSF after issuing by CHSR
3.	Letter of Good Standing	YES	To be kept up to date and filled in SSHSF
4.	Notification of Construction Work	Yes	To be submitted to DEL for recording, stamped copy forwarded to Client before SHE Plan Approval Letter will be issued. No work will be able to commence until letter has been issued including Site Establishment. work. To be filled in the SSHSF
5.	Signed and dated SHE Management Plan	Yes	To be filled in SSHSF
6.	Organogram	Yes	To be placed on the SSHSF, kept updated
7.	Signed and dated Health and Safety Policies	Yes	To include communication Register and filled in SSHSF
8.	Site Layout Plan	Yes	To be kept updated and filled in SSHSF
9.	Signed and dated Emergency Plan	Yes	To be kept updated and filled in SSHSF
10.	Signed and dated Environmental Management Plan	Yes	To be kept updated and filled in SSHSF
11.	Signed and dated Personal Hygiene and Infectious Disease Management Plan.	Yes	To be kept updated and filled in SSHSF.
12.	Signed and dated Fall Prevention Plan	Yes	To be reviewed prior to work being conducted and filled in SSHSF with communication record.
13.	Demolition Plan	No	To be submitted to CHSR and Structural Engineer for approval

			before work commences and filled in SSHSF with communication record.
14.	Two signed and dated risk assessments of priority risks as per the risk profile.	Yes	To be submitted with SSHSP for evaluation. To filed in SSHSF and reviewed prior to work being conducted.
15.	Two signed and dated Method Statements/ Safe Work Method Statements for the two priority risk assessments as per item 11.	Yes	To be submitted with SSHSP for evaluation. To filed in SSHSF and reviewed prior to work being conducted.
16.	Risk assessments and Method Statements.	Yes	To be kept on SSHSF with communication records
17.	Daily Safe Task Instruction (DSTI)	Yes	To be signed off at the start and end of shift with communication record, to be kept in SSHSF.
18.	Induction Course	No	To be reviewed, kept updated and include communication record register. Filled in SSHSF.
19.	Toolbox talks	Yes	To include communication register and filled in SSHSF.
20.	PPE Issue Record	Yes	To include training in correct use etc and filled in SSHSF.
21.	Sub – Contractor Monthly Audit records	No	To be discussed at SHE Committee meeting, closed out and kept on SSHSF.
22.	External Audit Reports	No	To be discussed at SHE Com Meetings, Internal Meetings etc and filed in SSHSF.
23.	Self-Audit Format	yes	To be completed on a monthly basis, forwarded to team members at least 7 days before progress meeting, to report on close out at the meeting. Filed on the SSHSF.
24.	Sub- Contractor Appointments and scope and list	No	To be kept on SSHSF
25.	Section 37(2) Agreements	No	To be kept on SSHSF.
26.	Copy of Construction Regulations	Yes	To be kept on SSHSF.
27.	Construction Manager (CR 8(1))	Yes	Including CV / Proof of Competency. To be kept in the SSHSF.

28.	Assistant Construction Manager (CR 8(2))	Yes, if applicable	Including CV / Proof of Competency. To be kept in the SSHSF.
29.	SHE Officer (CR 8(5))	Yes	Including CV / Proof of Competency and SACPCMP Registration. To be kept in SSHSF.
30.	Construction Supervisor (CR 8(7))	Yes	Including CV / Proof of Competency. To be kept in SSHSF.
31.	Assistant Construction Supervisor (CR 8(8))	Yes, if applicable.	Including CV / Proof of Competency. To be kept in SSHSF.
32.	Risk Assessor (CR 9 (1))	Yes	Including CV / Proof of Competency. To be kept in SSHSF.
33.	Fall Prevention Planner (10 (1)(a))	Yes	Including CV / Proof of Competency. To be kept in SSHSF.
34.	Temporary Works Designer (CR 12(1))	No	Including CV / Proof of Competency. To be kept in SSHSF.
35.	Temporary Works Supervisor (CR 12(2))	No	Including CV / Proof of Competency. To be kept in SSHSF
36.	Excavation Supervisor (CR 13(1)(a))	Yes	Including CV / Proof of Competency. To be kept in SSHSF
37.	Demolition work Supervisor (14(1))	No	Including CV / Proof of Competency. To be submitted with Demolition Plan. To be kept in SSHSF
38.	Scaffold Supervisor (CR 16(1))	No	Proof of Competency. To be kept in SSHSF
39.	Scaffold Erector (CR 16 (2))	No	Proof of Competency. To be kept in SSHSF
40.	Scaffold Inspector (CR 16(2))	No	Proof of Competency. To be kept in SSHSF
41.	Suspended Platform Supervisor (CR 17(1))	No	Proof of Competency. To be kept in SSHSF
42.	Material Hoist Inspector (CR 19(8)(a))	No	Proof of Competency. To be kept in SSHSF
43.	Bulk Mixing Plant Supervisor (CR 20(1))	No	Proof of Competency. To be kept in SSHSF

44.	Construction vehicle and Mobile Plant Operator (CR 23(1)(d))	No	Proof of Competency, medical fitness etc. To be kept in SSHSF
45.	Crane Supervisor (CR 22(a))		Proof of Competency, medical fitness. To be kept in SSHSF
46.	Temporary Electrical Installation Inspector (CR 24(d))	No	Proof of Competency. To be kept in SSHSF
47.	Stacking and storage Inspector (CR 28 (a))	No	Appointment, to be kept in SSHSF
48.	Fire Equipment Inspector (CR 29(h))	No	Including basic Fire Fighting Training proof of competency
49.	Fire Team Member (CR 29 (i))	No	Including basic Fire Fighting Training proof of competency
50.	Portable Electrical Equipment Inspector (EMR 9)	No	Appointment to be kept in the SSHSF
51.	Accident Incident Investigator (GAR 9(2))	Yes	Including CV / Proof of Competency. To be kept in SSHSF
52.	First Aider GSR (3(4))	No	Including at least Level 2 First Aid Competency. To be kept in the SSHSF
53.	Welding/Flame cutting equipment Inspector (GSR 9)	No	Appointment to be kept in the SSHSF
54.	Ladder Inspector (GSR 13 (a))	No	Appointment to be kept in the SSHSF.
55.	Hazardous Chemical Substances Supervisor (HCSR 3(3))	No	Appointment to be kept in the SSHSF.
56	Hand Tool Inspector (Sec 8(2)(a))	No	Appointment to be kept in the SSHSF.
57.	SHE Representative (Sec 17)	No	Including proof of Competency. To be filled in SSHSF
58.	Sub-Contractor (CR 7(1)(c)	No	As per applicable legislative requirements

59.	Electrical Contractor (EIR 6)	No	Including proof of Professional Registration
60.	Registered Asbestos Removal Contractor (AR 21(1)(i))	No	Proof of registration with DOL,SHE Plan to be submitted to DEL with Notification. Signed off by AIA and CHSR.
Registers as required by scope of work, equipment, facilities etc.			

12.3	**Annexure C: OHS Bills of Quantities.**

HEALTH AND SAFETY IMPLEMENTATION AND MANAGEMENT COSTING

The Contractor must complete this sample sheet and submit with his SHE Plan.
Items may be added or removed as required by the Contractor.

ITEM	DESCRIPTION	UNIT	QUAN-TITY	MONTHS (Indicative)	RATE	AMOUNT (a)x(b)
1	**MEDICALS**					
1.1	Pre-employment medical	Nr.				
1.2	Psychological medical for working at heights	Nr.				
1.3	Psychological medical for working motorized equipment & construction machinery	Nr.				
1.5	Routine medical as per requirement of job activities	Nr.				
1.6	Re-medicals - yearly	Nr.				
	OTHER ITEMS					
	TOTAL					
2	**PERSONAL AND GENERAL PROTECTIVE EQUIPMENT**					
2.1	Overalls Blue					
2.2	Hard Hats					
2.3	Safety Boots/Shoes. Steel toecap Gumboots					
2.4	Gloves					
2.5	Hearing Protection					
2.6	Eye Protection					
2.7	Reflective vests					
2.8	Orange Star Netting - 1.2m High	m				
2.9	Orange Plastic Road cones	Nr.				
2.10	Plastic Reinforce Caps(Rebar)	Nr.				
2.11	Dust masks	Nr.				
	OTHER ITEMS					
	TOTAL					
3	**FIRE FIGHTING**					
3.1	Fire extinguishers - 4.5Kg	Nr.				
3.2	Training	Nr.				
3.3	Surveys	Nr.				
3.4	Other - Drip trays	Nr.				
	OTHER ITEMS					
	TOTAL					
4	**HEALTH AND SAFETY PERSONNEL**					

4.1		Nr.				
4.2	Part Time Safety Officer (2x days a week)	Nr.				
4.3	Full time Safety Representatives if required	Nr.				
4.4	Fire Watchers	Nr.				
4.5	First aiders	Nr.				
4.6						
4.7						
4.8	Construction Phase SHE Plan					
	OTHER ITEMS					

	TOTAL					
5	**FACILITIES**					
5.1	Provision of ablution facilities	Nr.				
5.2	Service and maintenance of ablution facilities	Nr.				
5.3	Provision of eating areas	Nr.				
5.4	Cleaning of Lay down and other storage areas	Nr.				
5.5	Wash hand basin	Nr.				
5.6	Hot and Cold running water	Nr.				
	OTHER ITEMS					
	TOTAL					
6	**FALL PREVENTION / PROTECTION**					
6.1	Safety harnesses with double lanyards	Nr.				
6.2	Lanyard extenders	Nr.				
6.3	Scaffold hooks	Nr.				
6.4	Lifelines and vertical fall arrest systems	Nr.				
6.5	Scaffolding – material, erection and inspection (Estimate for project)	Nr.				
6.6	Temporary hand railing material and kick flats	Nr.				
6.7	Inspection for approval of equipment (AIA)	Nr.				
6.8	Chin Straps/Toolbags/Wrist straps	Nr.				
	OTHER ITEMS	Item				
	TOTAL					
7	**VEHICLE / MOBILE EQUIPMENT UPGRADE FOR USE ON SITE**					
7.1	Raised lights	Nr.				
7.2	Rotating orange light	Nr.				
7.3	Flag as per procedure	Nr.				
7.4	Fire extinguisher - 4.5Kg	Nr.				
7.5	First aid box	Nr.				
7.6	Reflector tape	m				
7.7	Danger Tape	Rolls				
7.8	Signage	Nr.				
7.9	Roll over & fall over protection	N/A				
7.10	Safety belts for all passengers (LDV)	N/A				
7.11	Wheel; Chocks	N/r				
7.12	Directional control Signage	N/r				
	OTHER ITEMS					
	TOTAL					
8	**LIFTING MACHINERY AND EQUIPMENT**					

8.1	Annual inspections and load testing as per legal requirement	Nr.				
8.2	Certification of all lifting gear during the course of the project	Nr				
8.3	Third Party Inspections	N/r				
8.4	Inspections for approval of equipment (AIA)	N/r				
8.5	Slings	N/r				
8.6	Chains	N/r				
	OTHER ITEMS					
	TOTAL					
9	**INSURANCES**					

9.1	COID cover for the project	Nr.				
9.2	Liability insurances	Nr.				
	TOTAL					
10	**FIRST AID**					
10.1	First aid boxes	Nr.				
10.2	Rescue equipment and stretchers	Nr.				
10.3	Replenishment of boxes and other supplies	Nr.				
10.4	Hazchem Spill kits	Nr.				
	OTHER ITEMS					
	TOTAL					
11	**TRAINING**					
11.1	SHE Representative	Nr.				
11.2	Supervisor A2 (No cost)	Nr.				
11.3	First Aid Level 1	Nr.				
11.4	Fire Fighting	Nr.				
11.5	Legal Liability	Nr.				
11.6	Scaffold Inspector					
11.7	Scaffold Erector					
11.8	Basic Working at Heights					
	OTHER ITEMS					
	TOTAL					
12	**SIGNAGE**					
12.1	All signage as required by law: regulatory, warning and information	Nr				
	OTHER ITEMS					
	TOTAL					
13	**ELECTRICAL**					
13.1	Locks required for lockouts	Nr.				
13.2 13.3 13.4 13.5	Tags Permit books Callipers Key safes	Nr. Nr Nr Nr				
13	**ELECTRICAL**					
13.1	Locks required for lockouts	Nr.				
13.2	Tags	N/r				
13.3	Permit Books	N/r				

13,4	Callipers	N/r				
13.5	Key Safes	N/r				
	OTHER ITEMS					
	TOTAL					
14	**PLANT & SCAFFOLDING**					
14.1	Telescopic Hoist	month				
14.2	TH-Driver	month				
14.3	Scaffolding	month				
14.4						
	OTHER ITEMS					
	TOTAL					

12.4	Compulsory SHE Checklists.

PLEASE NOTE THAT THESE CHECKLISTS ARE ONLY APPLICABLE FOR THE CONSTRUCTION PHASE OF THIS PROJECT AND MUST BE INSERTED WHEN THE SHE SPECIFICATION AND BASELINE RISK ASSESSMENT IS FINALISED AND HANDED TO THE PRINCIPAL CONTRACTOR FOR THE DEVELOPMENT OF HIS SITE-SPECIFIC HEALTH AND SAFETY SPECIFICATION.

HEALTH AND SAFETY IMPLEMENTATION COSTING

Contractor to give a breakdown of his Health and Safety costs on this sheet.

ITEM	DESCRIPTION	UNIT	QUAN-TITY	MONTHS (Indicative)	RATE	AMOUNT
			(a)		(b)	(a) x (b)
1	**MEDICALS**					
1.1	Pre-employment medical	Nr.	-			
1.2	Re-medicals - yearly	Nr.	-			
	TOTAL					
2	**PERSONAL PROTECTIVE EQUIPMENT**					
2.1	Overalls	Nr.				
2.2	Hard Hats	Nr.				
2.3	Safety boots/shoes	Nr.				
2.4	Gloves	Nr.				
2.5	Gumboots steel toe cap	Nr.				
2.6	Safety glasses	Nr.				
2.7	Reflector Bibs	Nr.				
2.8	Barricading Material	M				
2.9	Dust masks	Box 20				
	TOTAL					
3	**FIRE FIGHTING**					
3.1	Fire extinguishers - 4.5Kg	Nr.				
3.2	Surveys - Annual Service	Nr.				
	TOTAL					
4	**HEALTH AND SAFETY PERSONNEL**					
4.1	Safety Manager	Nr.				
4.2	Safety Officer	Nr.				
4.3	Construction Phase Safety, Health, Environmental and Waste Management Plan	Nr.				
	TOTAL					
5	**FACILITIES**					
5.1	Provision of ablution facilities	Nr.				
5.2	Service and maintenance of ablution facilities	Nr.				
5.3	Provision of eating areas	Nr.				
5.4	Cleaning of Lay down and other storage areas	Nr.				
5.5	Wash hand basin	Nr.				
5.6	Hot and Cold running water	Nr.				
5.7	Degreasing & Toilet soap	Nr.				
	TOTAL					
6	**FALL PREVENTION / PROTECTION**					
6.1	Safety harnesses with double lanyards	Nr.				
6.2	Safety harnesses with Scaffold hooks	Nr.				
6.3	Lifelines and vertical fall arrest systems	Nr.				
6.4	Scaffolding – material, erection and inspection (Estimate for project)	Nr.				
6.5	Temporary hand railing material and kick flats	Nr.				
6.6	Chin Straps	Nr.				
	TOTAL					
7	**FIRST AID**					
7.1	Replenishment of boxes and other supplies	Nr				
	TOTAL					

8	**TRAINING**					
8.1	SHE Representative	Nr.				
8.2	First Aid Level 1	Nr.				
8.3	Fire Fighting	Nr.				
	TOTAL					
9	**SIGNAGE**					
9.1	All Signage as required by Law, regulatory, warning and information	Nr.				
9.2	Posters for awareness	Nr.				
	TOTAL					
10	**ELECTRICAL**					
10.1	Replacement of Locks required for lockouts	Nr.				
10.2	Replacement of tags	Nr.				
10.3	Replacement for Permit books	Nr.				
10.4	Replacement of Callipers	Nr.				
	TOTAL					
11	**OTHERS (Project Specific)**					
11.1		Nr.				
	TOTAL					
GRAND TOTAL TO BE CARRIED TO THE PRELIMINARIES AND GENERAL IN BILL OF QUANTITIES						

Annexure 8

WAIVER OF CONTRACTOR'S LIEN

DEFINITIONS

Contractor:	_____
Employer:	Head: Public Works (KZN Department of Public Works: Province of KwaZulu-Natal)
Agreement:	GCC FOR CONSTRUCTION WORKS - SECOND EDITION 2010
Works (description):	**KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**
Site:	Region:Umsunduzi, Central District Municipality: Umgungundlovu Municipality: Ward Nr.: 25 Cluster Nr x:

AGREEMENT

The Contractor waives, in favour of the Employer, any lien or right of retention that is or may be held in respect of the Works to be executed on the Site

Thus done and signed at _____ on _____
[Date]

_____ _____
Name of signatory Capacity of signatory

_____ _____
As witness For and on behalf of the contractor who by signature hereof warrants authorisation hereto

ANNEXURE 10

THE EPWP CONDITIONS AND SPECIFICATIONS

Changes to be affected in the Bill of Quantities in P&G's Section C12 (page 11of 13)

C 12 EPWP Conditions and Specifications

C12 to be expanded from C 12.1 to C12.10 as follows;

	C 12 EPWP CONDITIONS AND SPECIFICATIONS			
	C12.1(a) Employment Targets The contractor needs to provide a realistic estimate on the number of jobs that the project has a potential to create throughout the project duration as the project will be implemented using Labour Intensive Construction methods on elements where it is economical and feasible. Number of jobs estimated to be created is a minimum of 10 unskilled labour F……..V……..T…….. Item It is a general requirement of this contract that persons normally resident in the ward of the works (local labour) be given preference for employment on the contract. Provided, however, that should adequate and appropriate labour not be available within the ward, others may be employed subject to satisfactory proof being provided that every reasonable endeavour has been made to employ local labour (Local Sub-contractor(s); Skilled; Semi-Skilled and Unskilled). The contractor shall in consultation with the local community leaders (Project Steering Committee) with the purpose of negotiating with them regarding the utilization of local resources in the construction process. In this regard, the contractor shall furthermore give preference, wherever possible to the employment of single heads of households, women and youth as well as families declared as most indigent by War on Poverty/ Sukuma Sakhe program profiling process. The contractor should aim, in general, to maximise the involvement of the local community, however workers from other communities should not exceed 20% of all persons working on the project, where local employees possess skills at level of competency that meet contractors requirements			
	C12.1 (b) Employment requirements Tenderers are advised that this contract will be subject to the Expanded Public Works Program (EPWP) aimed at alleviating and reducing unemployment. Tenderers must allow for any costs for the following employment requirements of the EPWP 1. 60% of unskilled labour to be women 2. 55% of unskilled labour to be youth aged between 18 and 35 years 3. 2% of unskilled labour to be people with disability 100% unskilled labour utilized must reside within the boundaries of the Municipality Ward where this contract is executed, with preference to the local community closest or a walking distance to the contract site. Wherever possible local skilled tradesmen are to be employed on this contract with the view to maximize utilization of local resources. F……..V……..T…….. Item			

C12.1 (c)Labour rate and payment intervals

The contractor should ensure that the labour rate paid to unskilled local labour is commensurate to the daily task. When determining the rate, consideration should be given to that EPWP beneficiaries are mostly bread winners in their families, as the program intends alleviating poverty. There should also be consideration that the labour rate promotes creation of expanded number of jobs created and person days of work.

Contractors should make endeavours to ensure that labourers, particularly unskilled are remunerated on fortnight basis and prior notification be made should there be a shortfall on their wages.

The labour rate for local unskilled shall also be determined in consideration of the location of the project, i.e. for projects implemented in urbanized municipalities will not be the same as that for rural municipalities.

F…….....V……T……..

Item

C12.2 (a)Labour Intensive Construction (LIC) method

On site there must a person(s) having the competency in managing and implementing LIC methods.
*Foreman @ NQF Level 4 the Unit Standard on Implementing LIC methods on site.
*Site Agent/ Managers @ NQF level 5 the Unit Standard on Manage Labour-Intensive Skills Programme both must be CETA accredited

Item

F……V……T……

C12.2 (b) Labour Intensive Construction Method

Those parts of the contract to be constructed using Labour Intensive methods will be marked in the BoQ with letter LI (indicating Labour Intensive) against every item so designated. Such works will only be constructed using the method so indicated.
Reference to be made to Guidelines for the implementation of Labour-Intensive Infrastructure projects under EPWP.

"Scope of Work in Respect of Work Relating to the Expanded Public Works Programme (EPWP)"

Labour-intensive component

Due to the nature of the work involved, this type of project lends itself to be feasible as a labour-Intensive project i.e. the construction activities will indeed require skilled/unskilled labour.

The aim of the projects is to provide some form of economic benefit whilst generating and increasing the acquired skills shortage to improve sustainability in the local area. The following are potential focus areas where employment creation can be optimized per project:

(i) Trenching works not exceeding depth of 1.5m, including trenching for Foundation, Electrical, Water, Mechanical & Civil Services Works including backfilling where ground conditions permit
(ii) Building Works; All masonry works (which include concrete mixing on site; brickwork; block work ; plastering; screed works; jointing; etc.); Painting, Plumbing, Ironmongery; roof cladding; glazing; tilling; carpentry; flooring; waterproofing; etc.
(iii) Sewers works including Construction of manholes, laying of Sewer pipes, bedding, backfilling and compaction.

	(iv) Water Reticulation works including excavation, bedding, laying of pipes and compaction (v) Site Clearance Works (vi) Electrical Reticulation works. (vii) Stormwater water drainage using in-situ concrete (viii) Landscaping and Grassing of Sports Field (ix) Cleaning and Fencing Works The above identified activities are deemed suitable to be constructed using the LIC methods; to build, upgrade and maintain the social and economic of the underdeveloped area, promoting community participation, development of skills and creating more work opportunities. The above identified activities should be marked in the Bill of Quantities with the letter (LI). Contractor to price the above items in the Bill of Quantities bearing in mind that they are regarded as the main sources of job creation, whether sub contracted or undertaken by the main contractor. The use of plant to provide such works, other than plant specifically provided for in the scope of work, is a variation to the contract. The items marked with the letter LI are not necessarily an exhaustive list of all the activities which must be done by hand. Payment for items which are designated to be constructed labour-intensively (either in this schedule or in the Scope of Works) will not be made unless they are constructed using labour-intensive methods. Any unauthorised use of plant to carry out work which was to be done labour-intensively will not be condoned and any works so constructed will not be certified for payment. F……V……T …… Item			
	C12. 3 Record Keeping 12.3.1 Every employer must keep in the project site office the following minutes of site progress minutes; contractors' monthly site progress reports; accurately recorded attendance register; proof of payment as means to verify authenticity of data in the EPWP Beneficiary form submitted with payment certificates. Copies of submitted EPWP beneficiary data forms should also be kept in the site office. 12. 3.2 The employer must keep this record for a period of at least three (3) years after the completion of the project in his/her office as the project site office would have been relocated. This should be safely kept for job creation data verifications and periodical audits on projects conducted by National and Provincial Department of Public Works after one (1) or two (2) quarters of submitting captured EPWP Data to the National EPWP coordinating Department. F……V……T…… Item			
	C12.4 EPWP Monthly Reporting documents: At the end of each month the contractor must submit: • EPWP monthly data collection form • Worker monthly payment upload • Worker monthly acknowledgement of receipt of payment • Worker monthly Payment register • Worker monthly training form • Monthly attendance Register • Worker Monthly pay slips			

	• Unskilled labour certified ID copies (once off) • Beneficiary ID-size photos • Proof of UIF • Proof of COIDA F……..V……T…… Item			
	C12.5 EPWP Promotion 12.5.1 EPWP signage board EPWP Program at the project level shall always be promoted through the provision of projects signage board that embraces EPWP logo at the bottom, correct measurement for this sign board will be provided by the project leader during the site handing over meeting.			
	F……V……T…… …… Item			
	12.5.2 Branding of labour apparel Contractor & Sub-contractors' labourers shall be provided with EPWP branded Personal Protective Equipment (PPE), reflector vest with EPWP acronym at the back as an ideal and cost effective means of promoting program on site. The contractor is advised to price for both items 12.5.1 and 12.5.2 F……V……T…….. Item			
	C12.6 COMMUNITY LIAISON OFFICER (CLO) UTILISATION OF A COMMUNITY LIAISON OFFICER The Contractor shall allow for and pay any and all costs necessary for the engagement of the services of a Community Liaison Officer (CLO) for the full duration of this contract A CLO will be identified by the local structures (Project Steering Committee) of the ward areas and appointed following fair and transparent interviewing process, to be conducted in the presence of local structures and the contractor representative, in order to assist the Contractor in the procurement of any local labour, etc. required for this project. The Contractor is to liaise with the CLO and afford him any assistance needed in ensuring sound working relations with the local community. Key Responsibilities of the CLO are envisaged to include and not necessary be limited to: 1. Assisting local leadership in conducting skills and resources audit which facilitates sourcing labour from within the ward or targeted areas for employment, as required by contractor 2. Assisting in sourcing labour-only domestic sub-contractors and the procurement of materials from local resources, as required by the contractor. 3. Assisting the contractor by identifying areas of potential conflict and or threats to the project or to stakeholders in the project and recommend appropriate action to the contractor.			

	4. Assisting contractor and stakeholders in the project in the resolution of any conflict which may arise. 5. Establishing and ensuring that sufficient and open communication channels between the contractor and the work force are maintained. 6. Establish and ensuring that efficient and open communication channels between the contractor and the community are maintained 7. Identifying and reporting to the Contractor regarding issues where communication between stakeholder is necessary, recommend courses of action and facilitate such communications 8. Assisting the Contractor and the work force in the establishment of grievance procedures and necessary recommendation to the Contractor regarding the grievances and solution thereto. 9. Attending to site meetings and project implementation meetings as required by the Contractor and prepare and submit periodic reports as may be required by the Contractor from time to time. 10. Attending to such other duties which are consistent with the functions of a CLO, as may be required by the Contractor from time to time. Tenderers are to price twice the rate of unskilled local labour rate for the Community Liaison Officer (CLO) ,all costs arising out of compliance with the foregoing and in the event of a Tenderer failing to price against this item or making inadequate financial provision against this item for compliance as aforesaid, then no claim for costs or additional cost incurred will be entertained by the Head: Public Works F:..... V:..... T:..... Item			
	C12.7 Skills development on site The Contractor is conforming to the objectives of EPWP if his beneficiaries are capacitated with skills that will render them employable in the future. It is then the responsibility of the contractor that mandatory life skills are provided to 100% of workforce on site and on the job training to labourers from whom the potential for further development has been identified. The latter is not mandatory to all as it covers technical skills. Contractor should also make provision for the possibility that there might be local youth that will need to be placed on the project with an intention to be provided support towards improving their level of competency and productivity. Contractor shall also provide all necessary on-the-job training to targeted labour to enable such labour to master and advance on techniques required to undertake the work in accordance with requirements of the contract in a manner that does not compromise workers health and safety. F……V……..T…….Item			
	C12.8 Sub-Contracting for local emerging enterprises The project can support the notion of one main contractor to be appointed whilst several subcontractors, possibly from the local Small, Medium and Micro Enterprises (SMME) group, are employed to undertake various smaller activities. Two alternatives can be applied for setting out work for sub-contractors, i.e. full responsibility (provide			

their own plant, materials and labour) or secondly the main contractor remains responsible for the supply of plant and materials, while the sub-contractor is responsible for implementation, thus providing the skills and labour content only for the various construction activities.

The contractor will be required to appoint a reasonable number of emerging sub-contractors to undertake work to the minimum of 5% of the contract value on the various service areas but not limited to the following services;

Item	Description/Task/Activity
General Building works	Masonry
	Carpentry and joinery
	Floor finishes/Tilling
	Paint work
	Joinery fittings
	Plumbing (internal & external)
	Plastering
Civil works	Paving
	Landscaping

This percentage excludes the costs of employing local unskilled labour. A minimum of 5% of the total number of the appointed emerging subcontractors must be owned by females who have more than 50.1% ownership of their company/organization. SMME represent an important vehicle to address the challenges of job creation, economic growth and equity in our country. SMMEs are playing a critical role in absorbing labour, penetrating new markets and generally expanding economies in creative and innovative ways.

F……V……T……Item

C12.8.1 Subcontractor Procedure

The recommendation will be that the Contractor shall advertise and call for competitive tenders in respect of each portion of the works that are required to be subcontracted. The tenders received are then evaluated by both the employer and the contractor. The evaluation panel shall comprises equal representatives from the Employer and from the Contractor

The Contractor shall without delay enter into contract with the successful tendering subcontractor based on their accepted tender submission.

This will promote the cost effective participation and development of smaller registered contractors in larger valued contracts without losing single point of accountability for projects. This will allow the emerging contractors to tender for work in a fair, transparent and equitable manner rather than having to negotiate such contracts with the main contractor. Also guarantees the participation of contractors registered in lower contractor grading designation.

F……V……T……Item

C12.8.2 Subcontractor Mentoring

Once the Subcontractors have been identified and engaged, the Contractor shall closely monitor their performance in the execution of their contracts.

The Contractor will be responsible for drawing implementation plan that will assist in managing the development of sub-contractors undertaking Labour Intensive work.

The Contractor will be responsible for management of the sub-contractors and to ensure that they comply with all EPWP requirements as set-out in this specification.

The Contractor and sub-contractors will be required to compile monthly progress reports to be submitted with payment certificates. The reports shall include planned targets with regards to the works and employment, employment of EPWP beneficiaries and project expenditure. Failure to produce monthly reports will render payment certificates incomplete.

The contractor will be required to assist, train, mentor and monitor its Sub-contractors and report through monitoring tool on progress of each Sub-contractor.

F……V……T……Item

C12.8.3 Portfolio of Evidence

The Contractor is to develop and /or maintain a portfolio of evidence for each sub-contractor. The Portfolio of Evidence is a collection of proof of the training, coaching, guidance and monitoring inputs provided to the Sub-contractor. It is the document which records the development progress of the Sub-Contractor and will need to be updated continually throughout the duration of the contract.

The Portfolio of Evidence should include but not limited to the following documentation:

- The development path designed for each Sub-Contractor,
- The Training course completed by the Sub-Contractor,
- The hours of guiding, coaching and mentoring received for each activity listed in the developmental plan,
- A list of outcomes achieved at each level for each activity.

F……V……T……Item

Performance and penalties

The Contractor performance will be monitored throughout the contract. Should the Contractor fail to fulfil his obligation he will be liable for penalties. Payment of the penalty shall not absolve the Contractor of any claim, or relieve the Contractor of any of his duties, obligations or responsibilities under the contract.

- Utilisation of the Sub-Contractors

The Contractor's achievement of the targets will be measured quarterly to determine the progress made to date.

C12.8.4 Local Suppliers

Local material suppliers within the vicinity of the site to be utilise as long as their materials meets the required specification. However, quality and suitability would have to be checked by the employer, if the local suppliers are unable to meet the demand the nearest suitable suppliers are to be used.

Production of materials should be done on site, where economies of scale allow e.g. concrete paving blocks should be encouraged which will enable employment creation and also allow for enterprise development.

F……V……T……Item

C12.8.5 TENDERER'S TO NOTE CONDITIONS

a) The contract to be entered into between the Contractor and the Priority Population Group's (PPG's) will be a labour and material sub-contract or labour only depending on the contractor and subcontractor agreement.

b) The Contractor will be responsible for ensuring that all materials for use by the PPG's in the works are to be on site timeously. The Contractor shall liaise with The Mentor and PPG to determine the nature and extent of materials required and the lead time necessary.

F……V……T……Item

c) The Contractor shall be responsible for the overall programming of the Works and he is to allow for monitoring the PPG's programme and progress.

d)In conjunction with the Mentor, he is to allow for the supervision and mentoring (where necessary) of the PPG to ensure quality and adherence to standard building practice

F……V……T……Item

e) The Contractor is to allow for extra storage facilities on site for the PPG's tools and equipment.

F……V……T……Item

f) Basic tools shall be provided by the Priority Population Group's (PPG's) and where these are not available; the Contractor will supply him with the necessary tools and equipment and deduct the costs thereof from the interim claims made by the PPG.
g) Work requiring specialized tools will be provided free of charge by the Contractor with the provision that these be returned upon completion of the Work.

CO-ORDINATION AND SUPERVISION

The Contractor is to co-ordinate and supervise the work of all the PPG's, Sub-Contractors and Nominated Sub- Contractors appointed directly by the Employer in such a manner and at all times as will suit the building programme and he is to allow adequate access, for the PPG's, where required, to carry out their work in an efficient manner and acceptable quality standards in accordance with the specifications as no claims for extras in this connection will be entertained.

ATTENDANCE

The Contractor may allow for attendance upon the PPG's concerned to execute the work. The Contractor is to allow the PPG's the use of any scaffolding belonging to him while it remains so erected on the site.

Where scaffolding is necessary for the use by any PPG and the Contractor has not erected any for his own use or has removed same after his own use, the Contractor shall supply sufficient scaffolding to the PPG to be erected and dismantled by the PPG and returned to the Contractor.

This attendance upon PPG's to execute the work is to include for the scaffolding provisions as

	aforesaid and, in addition, is to include for co-operating to the fullest extent with all the parties, attending on off-loading materials, providing suitable storage for tools and materials used by the PPG's, use of general facilities such as latrines, etc., supply and cost of power, lighting, water and the like. F……..V……T…….. Item			
	C12.9 EPWP contract for labour It is compulsory that shortly after the contractor and or sub contractor has appointed local labour, the employment contract should be signed by both parties, prior to commencement with works on site. The employment contract forms part of the Ministerial Determination or from the regional EPWP officials. F……..V……T……..Item			
	C12.10 EPWP Scope of Work For This Project Contractors are to price the items on the Bill of Quantities highlighted below, bearing in mind that they are regarded as main sources of job creation, whether sub contracted or undertaken by the main contractor. Elements of the scope of work where the application of Labour Intensive Construction methods are indicated with the letters (LI) are as follows; i) Excavating trenches for foundations and any other civil works with the depth not more than 1.5 m ii) All masonry works which include concrete mixing on site; brickwork; plastering; screed works; jointing; etc. iii) Painting, Plumbing, Ironmongery; roof cladding; glazing; tilling; carpentry; flooring; waterproofing; etc. iv) External works such as landscaping; cleaning; paving; fencing; tarmac; etc. .			

KWAZULU-NATAL DEPARTMENT OF PUBLIC WORKS

EXPANDED PUBLIC WORKS PROGRAMME

The Attendance Register for on-site Workers

Reporting month: _____ Cell No: _____

Surname: _____ First Name: _____

Project Name: **KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS**

Project Code: **073636** Tender No **ZNTM01130W**

IDENTITY NUMBER:

Day	Date	Time In	Signature	Time Out	Signature	Report On Any Formal Training Provided In The Reporting Month
WEEK 1						
MONDAY						
TUESDAY						
WEDNESDAY						
THURSDAY						
FRIDAY						
WEEK 2						
MONDAY						
TUESDAY						
WEDNESDAY						
THURSDAY						
FRIDAY						
WEEK 3						
MONDAY						
TUESDAY						
WEDNESDAY						
THURSDAY						
FRIDAY						
WEEK 4						
MONDAY						
TUESDAY						
WEDNESDAY						
THURSDAY						
FRIDAY						
WEEK 5						
MONDAY						
TUESDAY						
WEDNESDAY						
THURSDAY						
FRIDAY						
Total Days worked						

KZN PUBLIC WORKS
Monthly Data collection for LOCAL Labour

Name of Contractor: _____ Project Code: **073636** Project location name (area):_____

Name of Project: **KZN Public Works: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS** Reporting month:_____ Project location (Ward No.):_____

Beneficiary Details																					Experience/Literacy				Location Details				Household Details		
No	First Name	Initial	Surname	ID number													D.O.B	Gender F/M	Disability Y/N	Start Date on the current month	End Date on the current month	Total days worked	Job description	Registered on UIF (Y /N)	Registered with CIDA (Y/N)	Are you receiving any Gov grant? (Y/N)	1st Language	Other Language 1	Other Language 2	Education Level (See Codes below)	Highest Level of Education	Address	Ward No.	Cell No.	Nationality	No. of people in Household	No. of Dependants in Household	No. of Children attending school
1																																	
2																																	
3																																	
4																																	
5																																	
6																																	
7																																	
8																																	
9																																	
10																																	

- Education Levels – use the codes (1,2,3) on the excel spreadsheet
  - **(1)** Unknown **(3)** Grade 1-3 (Sub A – Std 1) **(5)** Grade 5-6 (Std 3-4) ABET 2 **(7)** Grade 9 (Std 7) ABET 4 **(9)** Grade 12 (Std 10)
  - **(2)** No Schooling **(4)** Grade 4 (Std 2) ABET 1 **(6)** Grade 7-8 (Std 5-6) ABET 3 **(8)** Grade 10-11 (Std 8-9) **(10)** Post Matric

Contractor sign:_____ **DPW Official/Consultant sign:**_____ **EPWP Official sign:**_____

Designation:_____ Designation:_____ Designation:_____

Date:_____ Date:_____ Date:_____

Contact no:_____ Contact no:_____ Contact no:_____

Proforma Reference Letters for Previous Projects (Annexure 13)

To be completed by reference and returned

Project **Name** Completed..... Value:.....

Client **Name**:..... Year:.....

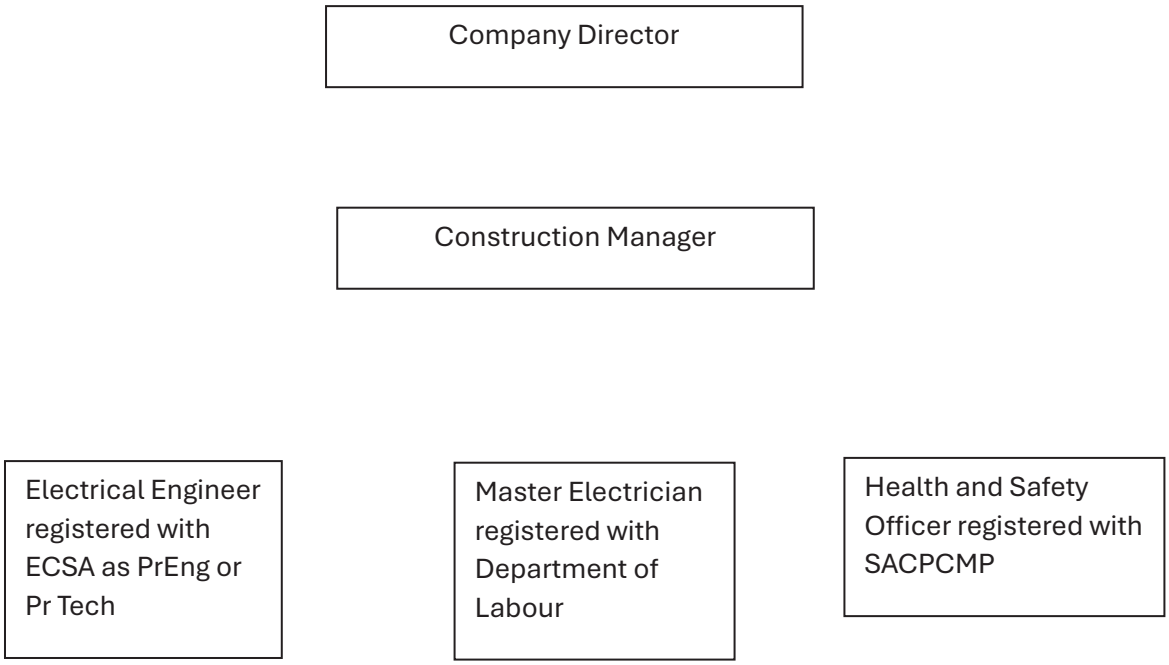
Please verify that the infromation provided by the respondant in Part A above is correct. Comment alongside if necessary		No / Yes	Comments
Please scoe and comment on the attributes listed below	Score out of 10		
Overall Project Planning by Contractor			
Ordering of Materials and Long Lead Materials			
Submission and Compliance with Construction Programme			
Application for resources on the project			
Site Management and Reporting			
Contractual acumen			
Administration of Subcontractors (Nominated, Selected, Domestic)			
Payment of Subcontractors and Suppliers			
Management of OHS and safety on site by the contractor			
Quality of Workmanship and Quality Assurance Testing			
Total Score (Sum of all scores)			

Referee name:..... Referee Signature.....

Designation.....

Date:..... Business entity/ Client Stamp

Tel:.....

PROJECT SPECIFIC ORGANOGRAM (ANNEXURE 14)

PROJECT DESCRIPTION: FORT NAPIER HOSPITAL: UPGRADE AND REPLACEMENT OF MEDIUM VOLTAGE SWITCHGEARS