

INSURANCE AND PENSION COMMISSION

BIDDING DOCUMENT

for the Proposed Phase Three Refurbishment of IPEC Head Office At No.90 Speke Avenue, Harare CBD

Electrical Engineering Works

11 APRIL 2025

**BIDDING DOCUMENT FOR PROPOSED PHASE TWO REFURBISHMENT OF IPEC OFFICE AT
NO.90 SPEKE AVENUE, HARARE CBD**

PROCUREMENT REFERENCE NO: IPEC/DOM036/2025

Standard Bidding Document for the Procurement of:	Office Renovations :Electrical Contractors
Proposed Office Refurbishment : Phase Two	NO. 90 Speke Avenue, Harare
Procurement Reference No:	IPEC/DOM036/20205
Procuring Entity:	Insurance & Pensions Commission
Date of Issue:	11 April 2025

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PART 1: BIDDING PROCEDURES

References:

References to the Act are to the Public Procurement and Disposal of Public Assets Act [Chapter 22:23] and references to the Regulations are to the Public Procurement and Disposal of Public Assets (General) Regulations (Statutory Instrument No. 5 of 2018). The terms and requirements in the Act and Regulations govern the submission of Bids and should be read by all Bidders.

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Preparation of Bids

You are requested to bid for the items specified in the Statement of Requirements below, by completing and returning the following documentation:

1. the Bid Submission Sheet in this Part 1;
2. the Priced Bill of Quantities (in Part 2.
3. Supplier Registration number showing that you are registered with the Procurement Regulatory Authority of Zimbabwe;
4. Bid securing Declaration in this Part 1;
5. the completed qualification forms provided in this Part 1;
6. Declaration of conflict/non-conflict of interest
7. Copies of the following:
 - Proof of Registration with Construction Industry Federation of Zimbabwe (CIFOZ) or Zimbabwe Builder's Contractors Association (ZBCA) or Ministry of Public Construction Category A should be submitted
 - Proof of Registration with Engineering Council of Zimbabwe (ECZ) should be submitted
 - Current Valid Tax Clearance Certificate
 - Current Valid NSSA Clearance Certificate
 - Certificate of Incorporation
 - CR14 list of Directors
 - Identity Documents of Directors
 - CR6 location of the organisation
 - Company Profile indicating similar projects undertaken
 - Three traceable references letters
 - Contract Management Structure and Personnel (Organogram)
 - Schedule of supervisory staff and site Personnel
 - Litigation History
 - Basic Price List
 - Rate at time of tender.
 - Cash flow Proposals
 - Proposed programme of works (Working programme)/ Gantt Chart

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- Site Establishment Proposals
- Health, Safety and Environmental (HSE) plan
- Site Visit Certificate
- Suppliers quotations

SPOC Fees

You are also required to pay the non-refundable administration fee of USD\$400.00 for bids subject to prior review by the Special Procurement Oversight Committee in terms of section 54 of the Act and as set out in Part IV of the Fifth Schedule to the Regulations. Payment should be made to the Procurement Regulatory Authority using the following payment options:

- a. A certified bank cheque, payable to the State Procurement Regulatory Authority, Commercial Bank of Zimbabwe, Kwame Nkrumah, Account Number: 01121064850030.
- b. A cash deposit/transfer payable at the Procurement Regulatory Authority of Zimbabwe (PRAZ) or transfer/cash deposit into the State Procurement Regulatory Authority Account, Commercial Bank of Zimbabwe, Kwame Nkrumah, Account Number: 01121064850030

You are advised to carefully read the complete Bidding Document, as well as the Special Conditions of Contract in Part 3: Contract, before preparing your Bid. The standard forms in this document may be retyped for completion but the Bidder is responsible for their accurate reproduction. All pages of the Bid must be clearly marked with the Procurement Reference Number above and the Bidder's name and any reference number.

Number of bids allowed

No Bidder may submit more than one bid, either individually or as a joint venture partner in another Bid, except as a subcontractor. Where the works are divided into lots and packages, only one Bid can be submitted. A conflict of interest will be deemed to arise if Bids are received from more than one Bidder owned, directly or indirectly, by the same person.

Clarification

Clarification of the bidding document may be requested in writing by any Bidder before **28 April 2025 and be uploaded on <https://egp.org.zw>**

Pre-bid meeting and Site Visit

A compulsory pre-bid meeting will be held on 22 April 2025 1000hrs am at IPEC Offices 90 Speke Avenue Harare

Validity of Bids

The minimum period that the Bidder's bid must remain valid is **90 (ninety) days** from the deadline for the submission of bids. While IPEC will endeavor to make a final decision within the bid validity period, IPEC reserves the right to negotiate an extension of the bid validity period with Bidders, no bid may be withdrawn or amended during the ninety (90) days from closing date of the Bid.

Submission of Bids

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Bids must be submitted online on the E-GP system (<https://egp.praz.org.zw>), no later than the due date and time of the submission. It is the Bidder's responsibility to ensure that they receive an online receipt confirming the submission of their bid that has the correct details.

The system will not allow the submission of bids after the due date and time. The Authority reserves the right to extend the deadline of the online bid submission date and time and will notify all potential bidders who have downloaded the bidding document

Online bid submission deadline date: 13 May 2025 Deadline Time: 1600Hrs

Mode of Submission: [Online on the E-GP system portal (<https://egp.praz.org.zw>)

The results of the evaluation will be communicated to every potential bidder who would have expressed interest.

Withdrawal, amendment or modification of Bids

A Bidder may NOT withdraw, substitute, or modify its Bid after it has been submitted.

Time for Completion

The time for completion of the Works is **12 weeks** which is the Intended Time for Completion in GCC 1.1(q) of the Special Conditions of Contract (SCC) in Part 3.

Bid Prices and Discounts

The bid rates and prices must cover all costs of labour, materials, equipment, overheads, profits and all associated costs for performing the Works and must include all taxes and duties. The whole cost of performing the Works must be included in the items stated, and the cost of any incidental works will be deemed to be included in the prices quoted. Bidders must include a contingency of 10 % of their Bid price, where indicated in the Summary of Bills of Quantities).

The Bidder must fill in rates and prices for all items of the Works described in the Bills of Quantities. Items against which no rate or price is entered by the Bidder will be deemed to be covered by the rates or prices for other items in the Bill of Quantities.

The price quoted in the Bid Submission Sheet must be the total price of the Bid, excluding discount. The Bidder must quote any discounts and the methodology of its application in the Bid Submission Sheet.

Currency

Bids should be priced in United States Dollars (US\$). The currency of evaluation will be US\$. Bids in other currencies will be converted to this currency for evaluation purposes only, using the exchange rates published by the Reserve Bank of Zimbabwe on the date of the submission deadline, see <http://www.rbz.co.zw/>.

Bid Security

The Bidder must include:

A bid security of **US\$11000.00 or the equivalent in ZWL\$ using auction rate as published by the Reserve Bank of Zimbabwe on the date of payment** in the following form:

Option 1

A refundable cash deposit/transfer payable at the Procurement Regulatory Authority of Zimbabwe (PRAZ) or transfer/cash deposit into the State Procurement Regulatory Authority Account, Commercial Bank of Zimbabwe, Kwame Nkrumah, Account Number: 01121064850030

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NB: If option 2 is chosen please note that the tenderer must pay a ***non-refundable Bid Bond/Bid security establishment fee of US\$375.00*** to the Procurement Regulatory Authority of Zimbabwe in line with S.I 5 of 2018 Part IV item 6

Option 2

A refundable Bank guarantee issued by a reputable Commercial Bank in the name of Insurance & Pensions Commission in the sum of US\$2,000.00 or equivalent in ZWL\$ using auction rate as published by the Reserve Bank of Zimbabwe at the time of payment.

Any bid not accompanied by a Bid Security in accordance with section 26 (3) of the Regulations or Bid Securing Declaration in accordance with section 26 (4) of the Regulations, where this is a requirement of bidding, will be rejected by the Procuring Entity as non-responsive.

The Bid Security or Bid-Securing Declaration of a Joint Venture (JV) must be in the name of the JV that submits the Bid. If the JV has not been legally constituted at the time of bidding, the Bid Security or Bid-Securing Declaration must be in the names of all intended partners.

Bidders are reminded that the Bid Security shall be forfeited in the event that the prospective bidder withdraws the tender after submission, or is unable to honour their proposal after contract award.

Unsuccessful Bid Bonds will be discharged automatically as soon as the winning bidder and the losing bidder (s) are notified by IPEC. The successful bidder's bid bond will be discharged upon the bidder's signing of the contract.

Bidders SHALL be required to submit proof of payment of the Bid Security together with their bid documents

As part of the bid bond requirements, bid bonds from insurance companies, insurance brokers and stock brokers are NOT ACCEPTABLE and will lead to **AUTOMATIC DISQUALIFICATION** whenever so provided.

Contract Administration Fees Payable by winning Bidder

Bidders must confirm that they will pay contract administration fees to the Procurement Regulatory Authority of Zimbabwe (PRAZ) upon winning the bid, in line with Part V of the Procurement Regulations (S.I 5 of 2018)

Origin of Materials, Equipment and Services:

All materials, equipment and services to be used in the performance of the contract shall have as their country of origin an eligible country, as defined in the Special Conditions of Contract.

Evaluation of Bids

Bids will be evaluated using the methodology set out in Part V of the Regulations.

Review by the Special Procurement Oversight Committee

Section 54 of the Act provides for review by the Special Procurement Oversight Committee for certain especially sensitive or especially valuable contracts. According to section 10(5) of and the Second Schedule to the Regulations this procurement will be reviewed by the Special Oversight Committee, therefore the bid documents should be identical

Domestic Preference

A margin of preference, in accordance with the procedures outlined in section 8 of the Regulations, will not apply.

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Eligibility and Qualification Criteria

Bidders are required to meet the criteria in section 28 of the Act and section 28(1) of the Regulations to be eligible to participate in public procurement and to be qualified for the proposed contract. They must therefore be a registered company

1. have the legal capacity to enter into a contract;
2. not be insolvent, in receivership, bankrupt or being wound up, not have had business activities suspended and not be the subject of legal proceedings for any of these circumstances;
3. have fulfilled their obligations to pay taxes and social security contributions in Zimbabwe;
4. not have a conflict of interest in relation to this procurement requirement;
5. not be debarred from participation in public procurement under section 72 (6) of the Act and section 74(1) (c), (d) or (e) of the Regulations or declared ineligible under section 99 of the Act;
6. Zimbabwean bidders only.
7. passed the minimum qualification criteria indicated in this Part 1; and
8. have been registered with the Authority as a Supplier and have paid the applicable Supplier Registration Fee set out in Part III of the Fifth Schedule to the Regulations.

Participation in this bidding procedure is open to both Zimbabwean and foreign bidders.

Detailed Evaluation

The Bids will be examined to confirm that all terms, conditions and requirements of the bidding document have been complied with by the Bidder. The assessment of responsiveness shall be determined in accordance with the criteria in section 28 of the Regulations.

Evaluation of Technical Bids will include an assessment of the Bidder's technical capacity to mobilize key equipment and manpower which is substantially responsive to the Procuring Entity's Requirements.

Award of Contract

Bidders are advised that the bid sum submitted by Bidders will not be the only criteria upon which the selection of the successful Bidder will be based. It therefore means that the lowest bidder shall NOT automatically be awarded the Contract.

The lowest evaluated bid will only be recommended and considered for Contract award after the application of any additional evaluation criteria, including any margin of preference, which is substantially responsive to the requirements of this bidding document.

The following major components shall constitute the evaluation of the tender:

- i) The Bidder's rates shall be checked against the market rates, and against the basic prices of the various materials. The basic prices submitted will also be checked against the current prices in the market at the time of tender. Therefore, the Tenderer will be required to submit a comprehensive basic price with Bonafide quotations, and the rates inserted in the Bills should reflect the quotations received. The contractor should also state his average profit margin.
- ii) Submission of compliant required documents
- iii) Compliance to specifications
- iv) Bidder's record of successful completion of works of a similar nature.
- v) Bid Price

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The lowest evaluated bid, after the application of any additional evaluation criteria, including any margin of preference, which is substantially responsive to the requirements of this bidding document will be recommended for award of the Contract. The proposed award of contract will be by issue of a Notification of Contract Award in terms of section 55 of the Act which will be effective on receipt of a Letter of Acceptance in accordance with Part 3: Contract. Unsuccessful Bidders will receive the Notification of Contract Award and if they consider they have suffered prejudice from the process, they may, within 14 days of receiving this Notification, submit to the Procuring Entity a Challenge in terms of section 73 of the Act, subject to payment of the applicable fee set out in section 44 of and the Third Schedule to the Regulations.

Right to Reject

The Procuring Entity reserves the right to accept or reject any Bids or to cancel the procurement process and reject all Bids at any time prior to contract award.

Corrupt Practices

The Government of Zimbabwe requires that Procuring Entities, as well as Bidders and Contractors, observe the highest standard of ethics during the procurement and execution of contracts. In pursuit of this policy:

1. the Procuring Entity will reject a recommendation for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract or has been declared ineligible to be awarded a procurement contract under section 99 of the Act;
2. the Authority may under section 72 (6) of the Act impose the debarment sanctions under section 74(1) of the Regulations; and
3. any conflict of interest on the part of the Bidder must be declared.

No Bidder shall contact the client or professional team on any matter relating to his bid, from time of the bid opening to the time the Contract is awarded.

Any effort by the Bidder to influence the professional team/client's bid evaluation, bid comparison or Contract award decisions **will result in the rejection of the Bidder's bid.**

Bid Submission Sheet

{Note to Bidders: Complete this form with all the requested details and submit it as the first page of your Bid. Attach the completed Statement of Requirements and any other documents requested in Part 1. Ensure that your Bid is authorised in the signature block below. A signature and authorisation on this form will confirm that the terms and conditions of this Bid prevail over any attachments. If your Bid is not authorised, it may be rejected. If the Bidder is a Joint Venture (JV), the Bid must be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.

Bidders should mark as “CONFIDENTIAL” information in their Bids which is confidential to their business. This may include proprietary information, trade secrets, or commercial or financially sensitive information.}

Procurement Reference Number:

Subject of Procurement:

Name of Bidder

Bidder's Reference Number:

Date of Bid:

We offer to supply the items listed in the attached Statement of Requirements, at the prices indicated on the attached Price Schedule and in accordance with the terms and conditions stated in your Bidding Document referenced above.

We confirm that we meet the eligibility criteria specified in Part 1: Procedures of Bidding.

We declare that we are not debarred from bidding and that the documents we submit are true and correct.

The validity period of our bid is:{days} from the date of submission.

We confirm that the prices quoted in the attached Price Schedule are fixed and firm for the duration of the validity period and will not be subject to revision, variation or adjustment.

**BIDDING DOCUMENT FOR PROPOSED PHASE TWO REFURBISHMENT OF IPEC OFFICE AT
NO.90 SPEKE AVENUE, HARARE CBD**

PROCUREMENT REFERENCE NO: IPEC.DOM036/2025

Bid Authorised By:

Signature	Name:
Position:	Date:(DD/MM/YY)
Authorised for and on behalf of:	
Company	
Address:	
.....	

Qualification Criteria

Factor	Financial Situation					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture, Consortium or Association			
	All partners combined		Each partner	At least one partner		
1. Financial Resources	The Bidder must demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet the cash-flow requirement for the contract.	Must meet requirement	Must meet requirement	Must meet _____ percent (____%) of the requirement	Must meet _____ percent (____%) of the requirement	Form 3

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Factor	Experience					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture, Consortium or Association			
			All partners combined	Each partner	At least one partner	
1. General Experience	Experience under contracts in the role of contractor, subcontractor, or management contractor for at least the last 3 years prior to the bid submission deadline, and with activity in at least 9 months in each year.	Must meet requirement	N / A	Must meet requirement	N / A	Form 4
2. Specific Experience	Participation as contractor, management contractor, or subcontractor, must be at least a Ministry of Public Works Category A	Must meet requirement	Must meet requirements for all characteristics	N / A	Must meet requirement for one characteristic	Form 5

PQ FORM 1 – FINANCIAL SITUATION

Historical Financial Performance

Bidder's Legal Name: _____

Date: _____

JV Partner Legal Name: _____

Bidding No.: _____

Page _____ of _____ pages

To be completed by the Bidder and, if Joint Venture (JV), by each partner

Financial information in USD equivalent	Information for previous year (USD equivalent)
Information from Balance Sheet	
Total Assets (TA)	
Total Liabilities (TL)	
Net Worth (NW)	
Current Assets (CA)	
Current Liabilities (CL)	
Information from Income Statement	
Total Revenue (TR)	
Profits Before Taxes (PBT)	

- ☐ Attached are copies of ***Audited financial statements*** (balance sheets, including all related notes, and income statements) for the previous year as required above complying with the following conditions:
- Must reflect the financial situation of the Bidder or partner to a JV, and not sister or parent companies
 - Must be audited by a certified accountant
 - Must be complete, including all notes to the financial statements
 - Must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted)

PQ FORM 2. ANNUAL TURNOVER (PREVIOUS YEAR)

Bidder's Legal Name: _____

JV Partner Legal Name: _____

Date: _____

Bidding No.: _____

Page _____ of _____ pages

Year	USD

PQ FORM 3. FINANCIAL RESOURCES

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract.

Source of financing	Amount (US\$)
1.	
2.	
3.	
4.	

PQ FORM 4. EXPERIENCE

GENERAL EXPERIENCE

Bidder's Legal Name: _____

Date: _____

JV Partner Legal Name: _____

Bidding No.: _____

Page _____ of _____ pages

Starting Month / Year	Ending Month / Year	Years*	Contract Identification	Role of Bidder
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Purchaser: Address:	_____
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Purchaser: Address:	_____
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Purchaser: Address:	_____
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Purchaser: Address:	_____
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Purchaser: Address:	_____
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Purchaser: Address:	_____

*List calendar year for years with contracts with at least nine (6) months' activity per year starting with the earliest year

PQ FORM 5. SPECIFIC EXPERIENCE

Bidder's Legal Name: _____

Date: _____

JV Partner Legal Name: _____

Bidding No.: _____

Page _____ of _____ pages

Similar Contract Number: 5 (Five) [insert specific number] of ____ [insert total number of contracts required].	Information		
Contract Identification	_____		
Award date	_____		
Completion date	_____		
Role in Contract	<input type="checkbox"/> Contractor	<input type="checkbox"/> Management Contractor	<input type="checkbox"/> Subcontractor
Total contract amount	_____		UGX _____
If partner in a JV or subcontractor, specify participation of total contract amount	_____ %	_____	UGX _____
Procuring Entity's Name:	_____		
Address:	_____ _____ _____		
Telephone/fax number:	_____ _____		
E-mail:	_____		

PQ Form 5a. Specific Experience (cont.)

Bidder's Legal Name: _____

Page _____ of _____ pages

JV Partner Legal Name: _____

Similar Contract No.5 (Five) [insert specific number] of ____ [insert total number of contracts] required	Information
Description of the similarity in accordance with Sub-Factor 2.4.2a) of Section III (Evaluation and Qualification Criteria):	
Amount	_____
Physical size	_____
Complexity	_____
Methods/Technology	_____
Physical Production Rate	_____

PART 2: PROCURING ENTITY'S REQUIREMENTS

Scope of Works

Procurement Reference Number:

For further guidance, see the full tender document for works

Brief Description of Works: Refurbishment of 99 Speke Avenue, comprising refurbishment of three floors and a basement. Works include, new façade, new floors, ceilings, partitions, etc

Location of Works: 90 Speke Avenue, Harare Zimbabwe

Commencement and Completion Periods Required

Completion period:..... months

Commencement Date: TBA

Specifications

The Works are to be performed in accordance with the following attached specifications:

1. Preambles and Specifications attached herein
2. Bills of Quantities
3. Drawings
4. Any other Information availed

Drawings

SCHEDULE OF ELECTRICAL SERVICES CONTRACT DRAWINGS FOR THE PROPOSED PHASE TWO REFURBISHMENT OF IPEC HEAD OFFICE AT NO.90 SPEKE AVENUE, HARARE

DRAWING NO.	DESCRIPTION
728/E/101	ELECTRICAL SERVICES BASEMENT FLOOR REFLECTED CEILING LIGHTING LAYOUT
728/E/103	ELECTRICAL SERVICES FIRST FLOOR REFLECTED CEILING LIGHTING LAYOUT
728/E/105	ELECTRICAL SERVICES THIRD FLOOR REFLECTED CEILING LIGHTING LAYOUT
728/E/201	ELECTRICAL SERVICES BASEMENT FLOOR SMALL POWER, TELEPHONE DATA AND LIGHTING LAYOUT
728/E/202	ELECTRICAL SERVICES GROUND FLOOR SMALL POWER, TELEPHONE DATA AND LIGHTING LAYOUT
728/E/203	ELECTRICAL SERVICES FIRST FLOOR SMALL POWER, TELEPHONE DATA AND LIGHTING LAYOUT
728/E/204	ELECTRICAL SERVICES SECOND FLOOR SMALL POWER, TELEPHONE DATA AND LIGHTING LAYOUT
728/E/205	ELECTRICAL SERVICES THIRD FLOOR SMALL POWER, TELEPHONE DATA AND LIGHTING LAYOUT
728/E/300	ELECTRICAL SERVICES MAIN LV SCHEMATIC
728/E/400	ELECTRICAL SERVICES FIRE ALARM SCHEMATIC LAYOUT
728/E/401	ELECTRICAL SERVICES BASEMENT FLOOR FIRE ALARM LAYOUT

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PROCUREMENT REFERENCE NO:

PART III CONTRACT

728/E/403	ELECTRICAL SERVICES FIRST FLOOR FIRE ALARM LAYOUT
728/E/404	ELECTRICAL SERVICES SECOND FLOOR FIRE ALARM LAYOUT
728/E/405	ELECTRICAL SERVICES THIRD FLOOR REFLECTED CEILING FIRE ALARM LAYOUT
728/E/503	ELECTRICAL SERVICES FIRST FLOOR VENTILATION SERVICES LAYOUT
728/E/505	ELECTRICAL SERVICES THIRD FLOOR AIR CONDITIONING SERVICES LAYOUT
728/E/703	ELECTRICAL SERVICES FIRST FLOOR WIFI ACCESS POINT LAYOUT
728/E/705	ELECTRICAL SERVICES THIRD FLOOR WIFI ACCESS POINT LAYOUT

Bill of Quantities

Use the collected Bill of Quantities for pricing, and submit hard copies to IPEC as set out in the Notice to Bidders.

Form of Bid Security

[This Bid Security should be on the letterhead of the issuing Financial Institution and should be signed by a person with the proper authority to sign the Bid Security. It should be included by the Bidder in its bid, if so indicated in the BDS]

Date: *[insert date (as day, month and year) of Bid Submission]*

Procurement Reference No.: *[insert Procurement Reference number]*

To: *[insert complete name of Procuring Entity]*

Whereas, *[insert complete name of Bidder]* (hereinafter called “the Bidder”) has submitted its bid dated *[insert date (as day, month and year) of bid submission]* for Procurement Reference number *[insert Procurement Reference number]* for the construction of *[insert brief description of the Works]* (hereinafter called “the bid”).

KNOW ALL PEOPLE by these presents that We *[insert complete name of institution issuing the Bid Security]* of *[insert city of domicile and country of nationality]* having our registered office at *[insert full address of the issuing institution]* (hereinafter called “the Guarantor”) are bound to *[insert complete name of Procuring Entity]* (hereinafter called “the Procuring Entity”) in the sum of *[specify in words and figures the amount and currency of the Bid Security]* for which payment well and truly to be made to the said Procuring Entity, the Guarantor binds itself, its successors or assignees by these presents.

Sealed with the Common Seal of the said Guarantor this *[insert day in numbers]* day of *[insert month]*, *[insert year]*.

THE CONDITIONS of this obligation are:

- (1) If the Bidder withdraws its bid during the period of bid validity specified in the bid submission sheet; or
- (2) If the Bidder having been notified of the acceptance of its bid by the Procuring Entity during the period of bid validity fails or refuses to: (a) sign the Contract., or (b) furnish the required Performance Security as required, or (c) accept correction of its bid price.

we undertake to pay to the Procuring Entity up to the above amount upon receipt of its first written demand, without the Procuring Entity’s having to substantiate its demand, provided that in its demand the Procuring Entity states that the amount claimed by it is due to it, owing to the occurrence of one or more of the above conditions, specifying the occurred conditions.

This security shall remain in force up to and including *[insert date, month and year in accordance with ITB Clause 18.3]* and any demand in respect thereof should be received by the Guarantor no later than the above date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758.

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

Name: *[insert complete name of person signing the Bid Security]*

In the capacity of *[insert legal capacity of person signing the Bid Security]*

Bid-Securing Declaration (Required)

{The Bidder must fill in this Form in accordance with the instructions indicated, where it has been stated in the Bidding Procedures that a Bid-Securing Declaration is a requirement of bidding}.

Procurement Reference number:

Date:[date (in day, month and year format)]

Bidder's Reference Number:

To: {full name of Procuring Entity}

We, the undersigned, declare that:

We understand that, according to the terms and conditions of your bidding documents, bids must be supported by a Bid-Securing Declaration.

We accept that we may be debarred from being eligible for bidding for any contract with a Procuring Entity in Zimbabwe for a period of time to be determined by the Authority, if we are in breach of our obligation(s) under the bidding conditions, because:

- (a) we have withdrawn our Bid during the period of Bid validity; or
- (b) having been notified of the acceptance of our Bid by the Procuring Entity during the period of bid validity, we fail or refuse to execute the Contract.

We understand this Bid Securing Declaration will expire if we are not the successful Bidder, either when we receive your notification to us of the name of the successful Bidder; or twenty-eight days after the expiration of our Bid, whichever is the earlier.

Signed	Name:
In capacity of:	Date:(DD/MM/YY)
Duly authorised for and on behalf of:	
Company	
Address:	
Corporate Seal (where appropriate)	

{Note: In case of a Joint Venture, the Bid Securing Declaration must be in the name of all the partners to the Joint Venture that submits the Bid.}

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PROCUREMENT REFERENCE NO:

PART III CONTRACT

Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, should only be completed by the successful Bidder after contract award.

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PART III CONTRACT

LETTER OF ACCEPTANCE

[To be produced on letterhead paper of the Procuring Entity]

To:

[name and address of the successful Tenderer]

Subject: Letter of Acceptance

This is to notify you that your Bid dated..... *[insert date]* for the execution of the
...*[insert name of the contract and procurement reference number,]* for the Accepted Contract
Amount of the equivalent of*[insert amount in numbers and words and name of currency],*
as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by the
Procuring Entity.

You are requested to furnish the Performance Security within 28 days in accordance with the
Conditions of Contract, using for that purpose the of the Performance Security Form included in
Section 3 (Contract Forms) of the Bidding Document. *[Delete page if no Performance Security is
required in the SCC]*

Signed: <i>[insert signature of authorised person]</i>
Name: <i>[insert complete name of person signing]</i>
In the capacity of: <i>[insert legal capacity of person signing]</i>
Duly authorized to sign the letter of acceptance for and on behalf of <i>[insert complete name of Procuring Entity]</i>
Date: day of {DD/MM/YY}

Attachment: Contract Agreement

CONTRACT AGREEMENT

Procurement Reference:

THIS CONTRACT AGREEMENT is made the.....day of, 2019

BETWEEN

(1) *[insert complete name of Procuring Entity]*, a *[insert description of type of legal entity, for example, an agency of the Ministry of of the Government of Zimbabwe, or corporation incorporated under the laws of Zimbabwe]* and having its principal place of business at *[insert full postal address of Procuring Entity]* (hereinafter called “the Procuring Entity”), and

(2) *[insert name of Contractor]*, a corporation incorporated under the laws of *[insert: country of Contractor]* and having its principal place of business at *[insert full postal address of Contractor]* (hereinafter called “the Contractor”).

WHEREAS the Procuring Entity desires that the Works known as *[name of the Contract]* should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and for the remedying of any defects in them,

The Procuring Entity and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are assigned to them in the General and Special Conditions of Contract referred to below.
2. The following documents shall constitute the Contract between the Procuring Entity and the Contractor, and each shall be read and construed as an integral part of the Contract:
 - (a) This Contract Agreement;
 - (b) The Letter of Acceptance;
 - (c) Standard Bidding Document (Non-Complex Works) for IPEC Harare
 - (d) The Special Conditions of Contract;
 - (e) The General Conditions of Contract;
 - (f) The Procuring Entity’s requirements (Specifications and Drawings);
 - (g) The Architect’s Drawings
 - (h) The Engineer’s Structural Drawings
 - (i) The Engineer’s Electrical and Mechanical Drawings

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(j) The completed Bill of Quantities and

(k) any other documents submitted by the Contractor forming part of the Contract.

3. This Contract Agreement shall prevail over all other Contract Documents. In the event of any discrepancy or inconsistency within the Contract Documents, then the documents shall prevail in the order listed above.

4. In consideration for the payments to be made by the Procuring Entity to the Contractor as mentioned below, the Contractor hereby agrees with the Procuring Entity to execute the Works and to remedy any defects in them in conformity with the Contract.

5. The Procuring Entity hereby agrees to pay the Contractor, in consideration for the execution and completion of the Works and the remedying of any defects in them, the Contract Price or such other sum as may become payable under the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS WHEREOF the parties hereto have caused this Agreement to be executed in accordance with the laws of Zimbabwe on the day, month and year indicated above.

For and on behalf of the Procuring Entity

Signed:

Name:

In the capacity of: *[Title or other appropriate designation]*

For and on behalf of the Contractor

Signed:

Name:

In the capacity of:*[Title or other appropriate designation]*

[Note: If the Contractor consists of more than one entity, all these entities should appear as signatories, e.g., in the following manner:]

For and on behalf of each member of the Joint Venture

Signed:

Name of member:

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In the capacity of: *[Title or other appropriate designation]*

Signed:

Name of member:

In the capacity of: *[Title or other appropriate designation]*

BANK GUARANTEE FOR PERFORMANCE SECURITY

[The issuing bank, as requested by the successful Bidder, must fill in this form in accordance with the instructions indicated]

Date: *[insert date (as day, month, and year)]*

Title of the procurement: *[Insert general title of the procurement]*

Procurement Reference No: *[insert reference]*

Bank's Branch or Office: *[insert complete name of Guarantor]*

Beneficiary: *[insert complete name of Procuring Entity]*

Performance Guarantee No:

We have been informed that *[name of the Contractor]*, (hereinafter called "the Contractor") has entered into Contract No. *[procurement reference number of the Contract]*. dated *[insert day and month]*, *[insert year]*, with you, for the execution of *[name of contract and brief description of Works]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we *[name of the Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[name of the currency and amount in figures]* ¹.... (. *[amount in words]*) such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee is effective from the issue date stated above and shall remain valid for the full amount until we receive a written declaration from IPEC that it has issued a Practical Completion Certificate in accordance with the terms of the Contract. Thereafter, this guarantee will be reduced to 50% (US\$...) of its value which shall remain valid for the whole Defects Liability period as defined in the Contract.

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This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758, except that subparagraph (ii) of Sub-article 20(a) is hereby excluded.

.....
[Seal of Bank and Signature(s)]

Note –

All italicized text is for guidance on how to prepare this demand guarantee and shall be deleted from the final document.

¹ *The Guarantor shall insert an amount representing the percentage of the Contract Price specified in the Contract and denominated either in the currency(ies) of the Contract or a freely convertible currency acceptable to the Procuring Entity.*

² *Insert the date twenty-eight days after the expected completion date. The Procuring Entity should note that in the event of an extension of the time for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.*

ADVANCE PAYMENT SECURITY

[The bank, as requested by the successful Tenderer, shall fill in this form in accordance with the instructions indicated.]

Date: *[insert date (as day, month, and year)]*

Procurement Reference No: *[insert reference]*

[Issuing bank's letterhead]

Beneficiary: *[insert legal name and address of Procuring Entity]*

ADVANCE PAYMENT GUARANTEE No.: *[insert Advance Payment Guarantee no.]*

We have been informed that *[name of the Contractor]* (hereinafter called "the Contractor") has entered into Contract No. *[procurement reference number of the Contract]*, dated *[insert day and month]*, *[insert year]* with you, for the execution of *[name of contract and brief description of Works]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the Conditions of the Contract, an advance payment in the sum *[name of the currency and amount in figures]* ¹ (..... *[amount in words]*) is to be made against an advance payment guarantee.

At the request of the Contractor, we *[name of the Bank]*. hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[name of the currency and amount in figures]** (..... *[amount in words]*) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor on its account number *[Contractor's account number]*. at *[name and address of the Contractor's Bank]*.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that eighty (80) percent of the Contract Price has been certified for payment, or on the day of ², whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months][one year]*, in response to the Procuring Entity's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758.
.....

[Seal of Bank and Signature(s)].....

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Note –

All italicized text is for guidance in preparing this demand guarantee and shall be deleted from the final document.

1 The Guarantor shall insert an amount representing the amount of the advance payment denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Procuring Entity.

2 Insert the expected expiration date of the Time for Completion. The Procuring Entity should note that in the event of an extension of the time for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.

PART 4 TECHNICAL SPECIFICATION

PART A: GENERAL TECHNICAL SPECIFICATION ELECTRICAL

PART B: DETAILED TECHNICAL SPECIFICATION

PART A : GENERAL TECHNICAL SPECIFICATION ELECTRICAL

This General Technical Specification specifies the standard of Workmanship and quality of material for the installation that is specified in Detail in the Detailed Specification and Contract Drawings.

The Detailed Specification shall take preference over the General Technical Specification where any conflicts exist.

I N D E X

Section Description

1.0	Low Voltage Switchgear & Distribution Equip
2.0	Low Voltage Switches
3.0	Cables
4.0	Conduit and Accessories
5.0	Metal Cable Trunking
6.0	Cable Trays
7.0	Lighting, Luminaries and Lamps
8.0	Wiring Accessories
9.0	Mounting Heights and Spacing of Equipment

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10.0	Earthing and Bonding
11.0	Tests
12.0	Outlets Related To Architectural Features
13.0	Fixing of Materials
14.0	Electric Geysers
15.0	Specialised Services
16.0	General Clauses

1.0 LOW VOLTAGE SWITCHGEARS AND DISTRIBUTION EQUIPMENT

SWITCH PANELS

1.1 All switchgear, fusegear, circuit breakers and distribution equipment shall be of 500 volts rating. As well as the latest British Standard Specifications, to comply with:

BS 5486 Part 1 1986 Interval Partitions

BS 5420 Protection of Devices

BS 5372 Cable Spacing

1.2 The rating of the equipment shall be as shown on the electrical schematic diagram(s).

Clearance and spacing between phase and phase, phase and neutral, phase and earth, neutral and earth shall be adequate and in accordance with BS 159.

1.3 A disconnectable neutral link shall be put on the right hand side of the main breaker or isolator of each switch panel. The neutral link shall not be accessible with the switch in the closed position. All spare ways shall be blanked off using PVC blanking plates to the approval of the Engineer.

1.4 All switchgear, fusegear, circuit breaker panels and distribution equipment shall be complete with all the necessary cable terminations to suit electrical services schematic diagram(s).

1.5 The main incoming switch on the main and sub-main panels shall be equipped with three maximum demand meters rated to the full load capacity of the main switch to measure the full load taken by the board. A voltmeter complete with a 7 position switch shall also be included to measure all phase to phase voltage and phase to neutral voltages and on/off position. Other metering required shall be as specified elsewhere in the drawings. Selector switches for volt-meters shall be of the "break-before-make" type and selector switches for ordering ammeters shall be of the "make-before-break" type.

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1.6 The Electrical Contractor shall ensure that adequate cable entry positions are provided to suit the particular circumstances.

1.7 The phase rotation, when viewed from the front, shall be Red, Yellow, Blue from left to right, or top to bottom.

1.8 The colour finish required will be detailed in the particular Specification.

1.9 Drawings of the proposed arrangements, including circuit diagrams, overall dimensions, holding down bolt positions and wiring channels for out-going distribution boards shall be submitted by the Electrical Sub-Contractor to the Architect/Engineer for comments before manufacture.

MOTOR CONTROL SWITCHGEAR

1.10 Control gear shall comply with the requirements of IEC 292, the control gear being rated according to the duty imposed by the particular application.

1.11 Motor contractors shall comply with IEC 158 Class of international duty 0-3 with type IP 52 enclosure protection and utilization category AC4. The contactors and their associated apparatus shall be capable of switching the stalled current, and shall have a continuous current rating of at least 50% greater than the full load current of the Motors they control.

1.12 The operating currents of overload trips fitted to motor contactors shall be substantially independent of ambient temperature conditions including the effect of direct sunlight on the enclosure in which the contractors are installed.

1.13 Each motor or group of motors shall be provided with control gear for starting and stopping by hand. Overload and single phasing protection shall be provided.

SECONDARY WIRING AND CABLING

Wiring and Terminal Blocks

1.14 Multi-core cabling to the remote control points and power supply cables shall be provided for the complete functioning of the motor.

1.15 All cables shall be of armoured type complete with all fixing materials. Conductors shall be of standard copper, unless otherwise approved by the Engineer.

1.16 Each terminal box shall have an earthing stand for earthing of the incoming cable screens.

Spares

1.17 The Contractor shall supply all spares specified in bill of Quantities (Bill No. 7 Spares). In addition bidders are requested to state their recommendations at the time of bidding.

1.18 Spares shall be delivered with the associated equipment and in order that spares may be placed on order at short notice full details including catalogue and/or spare parts numbers of all spares shall be supplied with the bid.

1.19 Spares shall be priced item wise.

1.20 All spares must be packed to be suitable for indefinite storage and special precautions must be taken to ensure that insulating materials included in the spares do not deteriorate during storage.

General Mechanical Construction

1.21 Switchboards shall be manufactured with a rigid and compact structures and shall be supplied complete as necessary. Cubicle pattern switchboards shall be in sections for easy assembly accurately aligned throughout.

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1.22 There shall be front access to the equipment for cabling, as specified in the particular specification and/or associated drawings. With rear access cubicle pattern boards, full height access doors shall be chromium-plated handles and substantial chromium plated hinges.

1.23 Where switchboards are to be floor mounted, adequate facilities for holding down bolts shall be provided and a plinth 40mm high shall be incorporated as an integral part of the base.

1.24 Wall mounted cubicles shall be provided with suitable internally positioned bolt holes to withstand the operation function and the weight of the panel.

1.25 Medium voltage switchboards shall be totally enclosed, metal clad, flush front and back pattern, suitable for front access and shall comprise such circuit breakers, busbars, distribution boards, contractors, control relays and meters etc., as specified. Switches shall be front operated with removable or retractable handles, and a full complement of handles shall be provided. All protection relays, ammeters etc., shall be mounted at or near eye level.

1.26 A copper earthing bar shall be provided throughout the length of the switchboard, suitably positioned to accept the earth termination of each cable.

1.27 All instrument and panel wiring shall be run in square and systematical lines and shall be fixed by means of purpose made insulated cleats, and shall be harnessed together by means of "hole and stub" polyvinyl chloride strip or other equal and approved. All instrumentation wiring shall have identification ferrules fitted to both ends, marked with circuit numbers. Trip circuits shall have an additional ferrule coloured red and marked "Trip". Each circuit shall be suffixed with the panel identification letter. Trip circuit cables shall be coloured black and current transformer cables shall be coloured with their respective phase colour.

1.28 Final cable terminations shall be by means of crimped ferrules or approved crimping tool.

1.29 Where an assembly of loose equipment is specified this will be detailed in the relevant section of the detailed specification and/or noted on the drawings.

1.30 Ammeters and current transformers shall comply with the relevant clauses of this Specification.

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1.31 The cubicle shall be arranged for adequate heat dispersion such that every component does not exceed its rated temperature limit and is at its optimum condition for maximum life and reliability.

1.32 All switchboards shall be capable of future extensions and shall be factory tested before delivery to site. The Electrical Sub-Contractor shall be responsible for ensuring that the switchboards are delivered to site in sections suitable for installation in the appropriate switchroom, and no claim will be entertained for extra payment due to his negligence to arrange accordingly. All the metalwork used in the Construction of the panel shall be cleaned of all scale and rust before painting, and the panel shall be bonderised and receive two finishing coats of colour to BS 381C.

1.33 All doors and removable panels shall contain suitable gaskets to make the compartments dustproof and vermin proof where necessary.

1.34 Before handover the interiors of all electric panels, starter panels and switchboards shall be cleaned. This includes the removal of any surplus wiring, filings, swarf, insulation ends etc. All equipment within or on the panels or switchboards is to be carefully dusted, and any accumulation removed by a suitable vacuum cleaner. A check is then made to ensure that all equipment is fully operational and all connections tightened.

General Electrical Construction

1.35 All insulating construction materials and components shall be non-hygroscopic non tracking. They shall not be readily combustible and shall be completely suitable for temperature which may occur within the switchboard.

1.36 All internal wiring of the panel shall comply with the relevant BS Specification with regard to colour coding.

1.37 The minimum size of the conductor employed for auxiliary wiring shall not be less than 1.5mm and no terminal studs smaller than 2BA shall be used. No terminal shall have more than two wires connected thereto. Tee joining of auxiliary wiring will not be permitted.

1.38 There shall be complete earth continuity throughout the switchboard and each section shall be adequately bonded internally.

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1.39 An earth terminal shall be provided at end of the switchboard for external earth connections and adjacent to each cable termination box.

Busbars

1.40 The busbars shall be of the rating specified and arranged to give an effective cooling surface. Busbars shall be rectangular section hard drawn, high conductivity copper, adequately rated and supported on non-hygroscopic insulators non-tracking. The busbars shall be adequately supported against short circuit forces, be provided with phase identification and be individually enclosed in solid insulation. The complete assembly shall be capable of withstanding the maximum possible mechanical stresses to which it may be subjected under fault conditions.

Busbar Chambers

1.41 Busbars shall be enclosed in sheet metal enclosures of not less than 14 gauge (CONDUCTORS) sheet metal. The enclosure shall be stove enamelled. The front cover shall be secured by means of hexagonal bolts.

1.42 Entry into the busbar chambers shall only be by the use of tools to remove a cover or panel.

1.43 Busbars and busbar connections shall be constructed in accordance with BS 158 and BS 159.

1.44 Connections to busbars shall be by means of a compatible split type cast clamp.

1.45 Busbars shall be fitted with phase colour identification discs at not more than 1500mm centres.

1.46 Busbar chambers shall not be used as wiring ways. Only busbar and cables connected thereto shall be permitted within busbar chambers.

1.47 Busbar chambers included in any switchgear shall be of the same manufacture and extend the length of the switchgear arrangement.

Inspection And Testing At Works

1.48 The manufacturers shall carry out tests at the Works after the completion of the switchboards and shall provide certificates of all tests carried out, which shall include the following:

- a) Over-voltage
- b) Insulation
- c) Operation of all individual switches

1.49 The electrical Sub-Contractor shall advise the Architect/Engineer when the Board has been completed and is available for inspection as an assembled unit. The Architect/Engineer reserves the right of access to the manufacturer's works at any reasonable time to ascertain progress and to inspect workmanship.

INSTRUMENTS

INSTRUMENTS AND METERING

General Requirements

1.50 Instruments and metering equipment described below and detailed on the drawings shall be provided. All electrical indicating instruments shall comply with BS89 and shall have an accuracy class index as follows:-

Instrument function

Accuracy class index

Switchboard indicating instruments 1.0

Ammeters and voltmeters on motor

Control panels 2.5

1.51 The installer shall submit with his Tender details of any internationally recognised Standards and codes of Practice he proposes to use in addition to those stated.

Instruments

1.52 All indicating instruments on any one switchboard or control panel shall be the products of one manufacturer selected from within a single range of matching instruments.

1.53 All ammeters and voltmeters shall be of the moving iron type.

1.54 All instruments shall be flush mounted, housed in a pressed steel or aluminium case, painted matt black or semi-gloss black, or in a black plastic case.

1.55 Ammeters and voltmeters shall be of the moving iron type, and shall have scale markings such that the effective scale range is not less than 90% of the total scale length, except as provided below for ammeters with "overload" scales.

1.56 So far as it is practicable to do so, the scale ranges of ammeters, voltmeters, watt meters and varimeters shall be chosen so that, under normal operating conditions, each instrument will read between 60% and 75% of the effective scale range.

1.57 Ammeters, voltmeters, and varimeters shall have quadrant shaped scales spanning an angle of not less than 90 degrees.

1.58 Ammeters for use in motor control centres shall have a maximum burden of 3VA at the upper limit of the effective range.

1.59 All electrical indicating instruments shall be square pattern, having nominal dimensions of 75mm x 75mm. Instrument dials shall bear only those names of items or information classified as essential in BS89; all other required information shall be marked on the exterior of the case.

1.60 Notwithstanding the requirements of BS89 ,dials of Power Factor meters shall be marked 'LEAD' and 'LAG' on the appropriate quadrants.

1.61 All instruments mounted on switchboards ,control panels or control desks shall have windows of non-reflecting glass.

1.62 All instruments shall be provided with external means for adjusting the zero indication.

1.63 Ammeters for use in, or in conjunction with, motor starters shall have overload scales with maximum scales equal to not less than six times the upper limit of the effective range. The scale shape shall be such that the effective scale range is not less than two thirds of the total scale length.

1.64 Ammeters for which the upper limit of the effective range does not exceed 20 Amperes may be direct(series) connected. For higher ranges ,current transformer operated ammeters shall be used and shall be designed for a secondary current of 5Amperes unless otherwise specified on schedule or drawings.

1.65 The use of resistive ammeter shunts for extending the ranges of ammeters operating on A.C. Circuits will not be acceptable.

1.66 All instruments shall be capable of operating continuously under condition corresponding to the upper limit of the effective range.

Ammeter and Voltage Switches

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1.67 Ammeter and/or Voltage switches shall be provided to enable one ammeter or voltmeter to read currents in, or voltage across, all three phases of a three phase system.

1.68 Ammeter switches shall have four operating positions marked "R", "Y", "B", and "N" and an, "off" position and shall enable the single ammeter to read ,in sequence, the currents in each of the three phases and the neutral wire of a four wire system.

1.69 Ammeter switches shall have "make before break" contacts and shall be connected so that the associated current transformers are short-circuited when they are not connected to the ammeter.

1.70 Voltmeter switches shall have six operating positions, marked "R-Y", "Y-B", "B-R", "R-N", "Y-N", "B-N" and an "off" position, and shall enable the single voltmeter to read, in sequence, each of the three line voltages and each of the three phase-to-neutral voltages in a three-phase four wire system.

1.71 Voltmeter switches shall have "break-before-make" contacts.

Identification Labels

1.72 All labels shall be of a three layer "Traffolyte" fixed by means of permanent mechanical fixings.

1.73 For general purposes the "Traffolyte" shall be White/Black/White with 8mm high characters.

1.74 Ancillary fuses or auxiliary relays shall be clearly and permanently labelled with the function and operating details including fuse type and rating where required. All auxiliary wiring shall be labelled fully numbered in a logical sequence by permanent slip on numbered ferrules and all terminal blocks and terminations shall be similarly identified.

Identification Of Equipment

1.74 a) The whole shall be given the general description (e.g. Main Panel).

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- b) Busbars shall be coloured to identify the phasing.
- c) All switchgear, fusegear, circuit breakers and distribution equipment to have a label identifying the function of that item.
- e) All equipment arrangements shall be further identified with a "DANGER" Notice.
- f) Electrical Contractor shall provide a diagrammatic layout of the distribution system and cables, clearly marked with all sizes and types of equipment, cabling, circuit references and the areas of equipment served, together with the information necessary for the identification of devices performing the functions of protection, isolation and switching and their locations.
- 1.75 The main electrical switch panels shall be provided with a black rubber mat 5mm thick extending 1 metre in front and the length of the panels.

Operating Instructions And Special Tools

- 1.76 Any special tools and two bound copies of all Maintenance and Operating Instruction shall be provided by the Electrical Contractor to be suitable for use by the Employer.

Low Voltage Circuit Breakers

- 1.77 Low voltage air circuit breakers shall be the air break, horizontal draw out pattern.
- 1.78 The rupturing capacity shall be as specified in the particular specification.
- 1.79 Circuit breakers shall comply with BS 4752 and shall be complete with overload, shunt-trip or no-volt coils and provision for remote tripping, all as detailed hereinafter.

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1.80 Circuit breaker closing mechanisms shall be of the trip-free type and shall incorporate a mechanical "ON/OFF" indicator and mechanical interlock in order to prevent withdrawal, plugging or access to the breaker in the closed position.

1.81 Contacts shall be robust in design, of adequate cross-sectional area and shall be provided with an arc quenching device and shall be capable of carrying full load for an indefinite period. Contacts shall have readily renewable tips.

The live fixed contacts shall be carefully shrouded.

1.82 Where a circuit breaker forms part of a switchboard, it shall be so arranged that it can be completely isolated from the switchboard. Isolated automatic shutter(s) shall close the fixed contacts in order to prevent inadvertent access and shut shutters will be lockable.

1.83 Circuit breakers shall be of the current rating specified and shall incorporate the following:

- a) Closing mechanism, trip coils and all ancillary apparatus.
- b) A wheeled carriage so arranged to move horizontally for isolation of the circuit breaker, with hinged rails so that further withdrawal is possible for maintenance outside the cubicle. The closed circuit breaker shall be suitable for standing on the floor without the use of a trolley when it is completely removed from the cubicle.
- c) Hand operated closing mechanism.
- d) The trip mechanism shall be electrically operated by means of the protection equipment specified.
- e) There shall be an ON/OFF/ISOLATED indicator.
- f) Six 15 amp secondary isolating contacts shall be provided, three being normally closed. These contacts shall be wired out to a terminal box.

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- e) The circuit breaker shall be equipped with interlocks to prevent access to live parts.

Distribution Boards

1.84 All distribution boards shall conform to BS 5486 and shall consist of substantial sheet metal cases with hinged doors. This metal work shall be primed, bonderised and finished in good quality stove enamel. Colour finish to be to BS 381C. The exact colour shall match the main and sub distribution switchboard as detailed in the schedule.

1.85 Gaskets shall be fitted to the doors to prevent the ingress of moisture and dust.

1.86 The distribution boards shall be supplied with removable end plates.

1.87 All neutral bars shall have sufficient ways to enable the maximum number of single-phase circuits to be connected without bunching. Connections to neutral bars shall be made in such a manner that they correspond to phase connections and conductors, and shall be marked with marker tape to indicate the circuit number and phase of the connection.

1.88 Every sub-circuit shall be ferruled at the distribution board with the circuit reference.

1.89 Insulating barriers shall be provided to prevent accidental contact with live parts. Phase barriers shall be fitted where applicable.

1.90 Where distribution boards are installed in locations remote from their controlling switches, they shall have "on-load" isolating switches of the rating scheduled, integral with the distribution board.

1.91 Miniature circuit breaker distribution boards shall be complete with miniature circuit breakers of the type specified.

1.92 For each distribution board a type written chart shall be supplied in a translucent holder and securely fixed on the inside of the distribution board door.

1.93 The chart shall state clearly details of equipment controlled, together with fuse or MCB rating and type, size and type of outgoing cables. A sample circuit listed shall be submitted for approval before installation.

1.94 Unless otherwise stated all distribution boards shall be mounted at a height of 1.5m measured from the floor to the bottom of the distribution board. Each distribution board with a door up to 500mm wide shall have one door only. Wider than 500mm shall have double doors with left and right hand vertical hinges.

1.95 All distribution board suppliers under this contract shall be supplied with miniature circuit breakers of the same manufacture. All isolator and main switches of the distribution boards shall be of the rating as detailed on the drawings.

1.96 On the cover of each distribution board, switch fuse and isolating switch a 45mm x 20mm "Traffolyte" label (White/Black/White) shall be fixed and engraved in 5mm characters giving details of the service and phase etc. In addition, a "Traffolyte" (White/Red/White) label engraving in 8mm characters "425/240 volt" shall be fixed to all TP & N distribution boards and isolators.

1.97 In addition, a "Traffolyte" label shall be fitted on the inside face of the door to indicate the following:

- i) Size, type and origin of sub-main cable.
- ii) Rating of cable protective device
- iii) Nominal voltage U_0 .
- iv) Prospective short circuit current (I_p) present at distribution board.
- v) Earth fault loop impedance (Z_e) external to the distribution board.
- vi) Estimated max demand (KVA).
- vii) Type of earthing.

All labels shall be permanently fixed

MINIATURE CIRCUIT BREAKERS

1.98 All miniature circuit breakers shall be of the type rating and duty specified on the drawings. Where miniature circuit breakers are installed for the protection of three phase circuits, the three phase units shall be interlocked such that operation of any one phase unit will cause the other two units to trip.

1.99 The design performance and test specification requirements for miniature, moulded-case and earth leakage circuit breakers shall comply with the following specifications:

BS 3871 Specification for Miniature and Moulded Circuit Breakers.

Part 1 (1965) Miniature Air-break Circuit Breakers for AC Circuits.

BS 4752

Part 1 (1977) Circuit Breakers.

B 4293 Specification for Current Operated
Earth-leakage Circuit Breakers.

BS 842 Specification for AC Voltage Operated
Earth-leakage Circuit.

Miniature circuit breakers shall be of a category to suit the short circuit rating specified.

Moulded-case Circuit Breakers

1.100 Moulded case circuit breakers shall comply with BS 4752. The current ratings and AC rated short circuit capacity shall be as indicated in the particular Specification and/or contract drawings. Moulded case circuit breakers shall be mounted on the vertical plane.

Miscellaneous Equipment

1.101 The equipment normally installed in or associated with switchgear, switchboards, starter panels and distribution boards to comply with the following and these shall also apply when items are installed in other locations.

Contactors

1.102 Contactors shall be totally enclosed in metal cases or high impact polycarbonate with hinged and/or bolted covers and be provided with external earth terminals where required for separate wall mounting. Where mounted with a common enclosure all components of each individual contactor shall be mounted on a common backplate. Separate mounting of a contactor and overloads shall not be allowed, except in a larger size unit.

1.103 Contactors shall have class of duty as defined in BS and as called for in the detailed Specification.

1.104 The operating coil voltage shall not exceed live/neutral voltage on a three phase device, and where groups of contactors are enclosed in a switchboard, a separate control transformer as detailed in the particular Specification may be required.

1.105 Auxiliary contacts shall be fitted as required by the design of the control circuit and other specified requirements.

1.106 For cubicle type boards and distribution boards the contactors (together with any associated relays) shall be housed in a separate compartment with its own hinged lid and shall be

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barriered from any other equipment. This arrangement is mainly intended for fuse distribution panels, but as far as possible the practice should be adhered to throughout for small contactors and relays.

1.107 All contactors, unless otherwise specified, shall have two normally open and two normally closed auxiliary contacts of 10 ampere rating.

Time Switches

1.108 Time switches shall be electrically operated and shall be complete with the number and type of contacts specified. All time switches shall have a spring or battery reserve movement of at least 24 hours and be electrically wound. Time switches shall be enclosed in a suitable type enclosure for the location, and designed to prevent damage to the clock movement.

Current Transformers

1.109 Current transformers for use in conjunction with instruments and protective relays shall be manufactured to BS 3938. The minimum accuracy shall be Class "C" for instruments and "S", "T" or "U" for protective metering and indicator relays as required.

1.110 Instruments transformers shall be of the ring type unless otherwise approved and shall be so mounted that convenient access is afforded for maintenance. The transformers shall be air insulated. Transformers shall not be mounted within the busbar chamber. Both primary and secondary ends shall be clearly and permanently marked with polarity.

1.111 A rating plate indicating the (a) accuracy, (c) serial number and (c) ratio, shall be fixed to the cases. The secondary winding of each transformer shall be earthed at one point.

1.112 Under no circumstances shall the secondaries of instrument transformers be left open circuited.

1.113 The current density in the primary winding at the rated over-current shall not exceed the figures in BS 3938. All current transformers shall have 5 amp secondaries, unless otherwise specified in the detailed Specification.

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1.114 All current transformers shall comply with all relevant requirements of BS 3938 and shall have a class accuracy designation according to the following table.

<u>Current transformer</u> <u>function</u>	<u>Accuracy class</u> <u>designation</u>
Switchboard indicating instruments	1.0
Motor starter ammeters	3.0
Protection	5P

1.115 Unless otherwise stated on the drawings, the current transformers are required for use under service conditions not more onerous than those set out in BS 3938.

1.116 Current transformers shall be designed either for measurement or for protection and shall not be used in a dual purpose role serving both instruments and protective gear.

1.117 Unless otherwise specified, all current transformers shall have 5A secondary windings.

1.118 So far as it is practicable, all current transformers shall be of the ring type; wound primary current transformers will only be accepted when the rated primary current is so low as to make the ring type impracticable.

1.119 All current transformers, whether of the ring type or the wound primary type, for use at voltages exceeding 1000v shall be epoxy resin encapsulated.

1.120 Where dual-ratio current transformers are called for, they shall be provided with two separate secondary windings capable of being connected in series or in parallel to give the required ratio.

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1.121 All current transformers shall be provided with a rating plate bearing the information set out in

BS 3938.

1.122 Current transformers which are to be installed in reasonably accessible places shall be equipped with an adequate terminal board or block; terminals shall be marked in the manner laid down in BS 3938.

1.123 In the case of current transformers which are to be installed in accessible places/locations, the secondary connections may be brought out by means of insulated leads to be made off a suitable terminal block mounted in a readily accessible position.

1.124 Every current transformer shall have a rated burden at least 50% greater than the total burden of the instruments, relays, and/or other apparatus which is to be served.

Voltage Transformers

1.125 Voltage transformers for use in connection with instruments and protective relays shall be manufactured to BS 3941.

Protection Relays

1.126 All overload relays shall be adjustable manual reset units combined with single phase protection.

1.127 All protection devices shall be capable of withstanding the fault currents that could occur at the point of the system where the unit is installed.

Earth Leakage Relay

1.128 All Earth leakage relays shall full comply with SABS 767.

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1.129 The electrical contractor shall be responsible for all commissioning and fault tests on site.

1.130 All units shall be suitable for operation at the system voltage, shall have test push buttons and unless otherwise specified, the sensitivity of all units shall be 25mA maximum.

2.0 LOW VOLTAGE SWITCHES

2.2 Insulators, switch fuse switches and changeover switches shall be continuously rated to BS 5419 and shall be high impact polycarbonate totally enclosed to IP54.

2.2 All switch fuses and isolating switches shall be 500 volt rating and suitable for the fault rating specified in the particular specification.

2.3 The switching action shall be quick-make, quick-break. The fixed contacts shall be fully shrouded and with the switch in the open position.

2.4 An ON/OFF position indicator shall be mechanically operated by the moving contacts to give an accurate and positive indication and means shall be provided for locking each switch in the open position only, unless otherwise stated.

2.5 All "Unit" type switches (as opposed to Cubicle type) shall have undrilled detachable end plates or "Knock-Outs". The appropriate holes shall be drilled or "Knock-Outs" removed on site.

2.6 The covers of all units shall be hinged on solid hinges which shall be capable of being removed only by the use of tools; split pins will not be accepted. The free side of the lid shall be secured by means of captive security devices.

2.7 Where units form part of a switchboard, fixed contacts shall be shrouded, and when the switch is opened they shall be shuttered.

2.8 Fuses shall be of the HRC cartridge type having a rupturing capacity appropriate to the current carrying capacity specified.

2.9 All fused switches, switch fuses and isolating switches shall be fitted with blank end plates for conduit or mineral insulated cable entry, or cable boxes, brass cone wiping glands and armour clamps for PVC SWA cable terminations as required. Reverse entry adaptors and angle end boxes shall be fitted where necessary.

3.0 **CABLES**

GENERAL

3.1 All cables shall be of one manufacture only and shall be delivered on site with markers seal, labels and other proof of origin intact. The labels and seals shall not be removed until the cable is required for use and shall be retained for inspection by the Architect/Supervising Officer.

3.2 All cables shall be colour-coded in accordance with the Standards Association of Zimbabwe (SAZ) Wiring Rules.

3.3 Where conductor sizes are not indicated on the particular Specification and/or the associated drawing(s), they shall be selected in accordance with the SAZ Wiring Rules the current rating required by the circuit loading, the type of cable, the ambient temperature, the conditions of installation and the maximum voltage drop permissible.

3.4 For general wiring all LV cables shall be of the 600/1000 volts grade minimum, single core, stranded Copper with PVC insulation complying with BS 6004 or BS 6346.

3.5 Single core cables shall be adequately fixed and braced with purpose made clips at suitable short fixing centres to ensure that damage does not occur under fault conditions.

3.6 Where single core cables are used, all necessary precautions shall be taken to prevent hysteresis circulating currents. This shall include the slotting of any ferrous plates through which cable(s) pass.

3.7 No through joints shall be permitted in any cable unless authorised in writing by the Architect/Engineer.

3.8 Under no circumstances shall multistranded cables have some strands cut to facilitate connection to circuit breakers, terminals and socket outlets. The Electrical Sub-Contractor shall ascertain that cables shown and sizes described elsewhere in this specification or drawings can be accommodated on the terminal of circuit breakers, terminal blocks, socket outlets, light switches and light fittings without cutting any strands of cables.

3.9 The ends of all cables shall be stripped with a special stripping tool manufactured for the purpose.

3.10 The Electrical Sub-Contractor shall be responsible for correctly measuring all cable lengths to various points, distribution boards etc., detailed in the Specification and drawings.

3.11 The electrical Sub-Contractor shall take all necessary precautions to protect all cables during the period of Contract.

3.12 Cable drums shall be removed from site as soon as it is practicable after the cable has been installed.

3.13 The successful Sub-Contractor shall, at the Engineer's discretion, be required to submit samples of cables for the Engineer's approval, and the Engineer reserves the right to call for cables of an alternative manufacture without any extra cost being incurred.

3.14 The sizes and description of all mains and sub-main cables are to be stated on the drawings and approximate positions of all distribution boards, fuse-boards and switchgear shall also be indicated.

3.15 The proposed runs of the mains shall be submitted to the Service Engineer (if he so requires) on a drawing before the work is actually commenced. Each main shall be one length without joints.

3.16 In all cases where PVC cables are installed, phase and neutral mains shall be run together in one conduit or trunking.

Underground Cables

3.17 LV cables shall be laid 600mm and HV cables 1000mm below general ground level. All cables in soil trenches shall be bedded in river sand or sifted ground, (no clay) 75mm below and 75 mm over cables before backfilling of excavations.

3.18 High voltage cables shall be covered for the entire cable route by means of approximately 300mm x 1000mm x 50mm thick precast concrete slabs. These slabs shall be laid over the 75mm of sand which covers the cable.

3.19 The Electrical contractor shall install cable markers on cable runs, on all bends and at 50m spacing on straight runs. Position of cable markers must be confirmed on the site.

3.20 Cable markers shall consists of 150mm x 150mm x 300mm high concrete blocks with aluminium or other rust free metal plates marked " HV cable" or "LV cable " or as otherwise specified and applicable.

3.21 Where cables are laid in cable ducts or trenches then such ducts or trenches may only be filled or closed after having been inspected and approved by the Engineer.

4.0 CONDUIT AND ACCESSORIES

Metal Conduit

4.1 Metal conduit installation specified herein shall be carried out in heavy gauge hot dipped galvanised screwed or black enamel conduit as particularly specified and comply with BS 4568.

4.2 No conduit of less than 20mm diameter shall be used on work under this specification.

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4.3 As applied to steel conduits and fittings the word "protection against corrosion to Class 2 (or to Class 4)" shall have the following meaning:-

Class 2 : Medium protection both inside and outside (e.g. stove enamel air drying paint).

Class 4 : Heavy protection both inside and outside (e.g. hot-dip zinc coating : sheradizing).

4.4 Steel conduit shall be galvanised or black enamel according to location. Black steel conduits shall generally be concealed in the building structure or in ceiling voids. Galvanised conduit shall be used in plantrooms and other service areas.

4.5 Where indicated on the contract drawings, or elsewhere as described in this specification, protective coating on surface mounted steel conduit and associated fittings shall be galvanised affording protection against corrosion according to Class 4. In all other situations conduit shall be black enamel affording protection against corrosion according to Class 2.

4.6 All conduits shall be free from rust patches or mechanical damage and shall be adequately protected from all types of damage when stored on site. Whenever the conduit finish is damaged during installation, the conduit shall be cleansed and painted with black enamel paint.

4.8 In exposed locations, i.e where directly exposed to the elements of weather, e.g on the roof, loading bays etc., the complete conduit installation, including accessories, shall be weatherproof.

PVC CONDUITS

4.33 PVC conduits shall be heavy gauge, high impact PVC not less than 20mm diameter external and manufactured to BS 4607. All conduit and accessories used shall be obtained from one manufacturer only.

4.34 All draw boxes and junction boxes shall be of ample size to permit the cables being drawn in and out. All circular boxes shall be provided with sprouts incorporating a shoulder for the proper butting of the conduits. At all lighting and switch points the conduit shall terminate in a suitable box provided with internal lugs to permit back plates or switch grids being attached to them by non-corrosive screws. All lids for draw boxes etc., shall be of PVC. Overlapping lids shall be provided for flush points.

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4.35 Proprietary steel or brass insert clips shall be fitted where luminaires are suspended from circular boxes to ensure that the weight of the luminaire is carried by the structure rather than the conduit box.

4.36 The ends of all conduits shall be cut square and shall butt solidly in the conduit fittings. Where they terminate in switchpanels, trunking, adaptable boxes or other non-sprouted enclosures etc., they shall be connected thereto by means of smooth bore male PVC bushes and sockets.

4.37 A position where more than one switch is to be mounted multiple boxes shall be used and not a series of single ones unless single boxes are otherwise specified to provide phase barriers.

4.38 All conduits shall be free of mechanical damage and shall be adequately protected from all types of the building structure. It shall be the Sub-Contractor's responsibility to inspect the conduit and accessories for damage before the final building finishes are applied or erected.

4.39 The Electrical Sub-Contractor shall provide attendance to the Main Building Contractor when concrete is being poured to walls containing electrical conduits.

4.40 All conduit joints shall be made using push-in types of couplers and accessories assembled with the adhesive supplied by the Manufacturer, and it shall be ensured that the conduit butt is in fully.

4.41 The ends of the conduit and the conduit fittings shall be cleaned before applying the manufacturer's instructions.

4.42 All bends and sets shall be made on site to suit conduits and not more than two right angle bends will be permitted without interposition of a draw box. Conduits up to and including 25mm diameter may be bent or manipulated cold by hand or forming machine. Larger sizes may be bent or manipulated by inserting the correct sized spring and bending by application of heat. In any case the installed conduit is to be free of kinks, distortion or damage.

4.43 All conduits shall be swabbed through before wiring is commenced, and cables shall not be drawn into any section not fixed in position.

4.44 Where conduits are to be chased into brickwork having a plastered finish, or run in the floor screed, the conduit shall be fixed with on hole PVC clips.

4.45 Where direct conduit entry is not possible or desirable, as is the case of motors etc., the conduit shall terminate at an agreed point adjacent to the motor etc., and the wiring shall be continued in a flexible PVC corrugated conduit cemented to an inspection box at the termination of the fixed conduit installation.

4.46 Conduits shall be run in a symmetrical manner and for surface runs shall be secured by PVC spacer bar saddles using non-corrosive screws at intervals not exceeding 1.3 metres.

Cables In Ducts

4.55 Where cables are to be installed in horizontal ducts, these are to be adequately supported by approved brackets. The brackets are to be installed so as not to damage the cabling and must allow air movement around the cables.

4.56 The complete bracket assemblies shall be correctly treated against corrosion, primed and painted before installation. The finish and fixing shall be appropriate to the conditions in which the bracket assemblies are installed.

4.57 Cables rising on vertical surface from floor ducts shall be adequately protected to a height of 1200mm externally and 2800mm internally by galvanised steel pipes or purpose-made galvanised steel channel. Pipes shall be bushed and sealed with compound. In rising ducts open to access, all non-armoured cables shall be protected against mechanical damage by the installation of the 300mm high steel "kick-shield" is to be of 14 SWG thickness and treated with one coat of suitable primer.

Cables In Conduit and/or Trunking

4.58 Where cables are installed into conduits and/or trunking, then the cables shall not be "drawn-in" until the section is complete and the building watertight.

4.59 Flexible cables for final connection to heaters shall be of heat resisting cable (e.g. butyl rubber) of appropriate cross-sectional area.

4.60 In the case of luminaires the conversion from PVC insulated cable to heat resistant cable shall be effected at the approved porcelain terminal box housed within the conduit box to which the luminaire is attached.

4.61 Under no circumstances shall cables pass through light fittings and light fitting or equipment shall form part of the conduit work.

4.62 Where cables are installed as through wiring of fluorescent luminaires then these shall be of high temperature butyl rubber type.

4.64 **Expansion Joints**

Where possible the position of expansion joint is indicated on the drawings .The Electrical contractor shall, however ,install expansion joints wherever conduit runs across structural expansion joints

5.0 METAL CABLE TRUNKING

5.1 Trunking shall be used where specified. It may be used in place of conduit if prior approval and permission is obtained from the Architect/Engineer.

5.2 As applied to cable trunking, the words "protection against corrosion to Class 2 (or Class 3) "shall have the meaning:

Class 2 Medium protection both inside ad outside (e.g. stove enamel, air drying paint, "Zintec" coating).

Class 3 Heavy protection both inside and outside (e.g. galvanised steel complying with BS 2989, Class 2A or 2B).

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5.3 Where indicated on the Contract drawings, trunking shall be galvanised, affording protection against corrosion in accordance with Class 3. In all other locations trunking shall be protected against corrosion in accordance with Class 2.

5.4 Trunking sizes and sheet steel thickness shall be as follows:

<u>Trunking Sizes</u>	<u>Sheet Thicknesses</u>
50mm x 50mm	1.20mm
75mm x 75mm and above	1.60mm

5.5 All steel trunking shall be manufactured to BS 4678, Part 1, of a thickness not less than 1.2mm corrosion resistant steel and shall be rigidly fixed. Where necessary the trunking shall be internally reinforced in such a manner that distortion will not occur during or after the installation of cables. It shall have a removable lid throughout its length.

5.6 Trunking of all sizes shall be secured at intervals of not more than 1200mm and joints shall not overhang a fixing by more than 600mm. The metal trunking shall be positioned and fixed as indicated by the drawings or in accordance with the Architect/Engineer instructions. Openings for conduit connections etc. shall be provided as required.

5.7 Manufacturer's standard accessories, e.g bends, tees etc., shall be employed throughout. Bends, tees, etc. shall be of the gusset or radius type. Cable leaving or entering the trunking shall be suitably supported to prevent damage or undue pressure on the insulation.

5.8 Where trunking passes through walls and ceilings, the cover shall be solidly fixed at 75mm either side of the walls and 150mm either side of the floors and ceilings. Internal fire resisting barriers shall also be fitted.

5.9 No metal trunking shall be installed with cover on the accessible side.

6.0 CABLE TRAYS

6.1 The electrical Sub-Contractor shall supply and erect all cable trays, racks, brackets, clips, cleat hangers and other steel work required for supporting the cabling indicated on the drawings.

6.2 Cable trays generally shall be formed from plain sheet steel complying with BS 1449, Part 1B, Classification CRA/GP. The cable tray shall be perforated and afforded protection after manufacture.

6.3 All cable trays shall be of perforated steel with a suitable upstand at each side. Trays up to 300mm in width shall be 14 SWG metal. All trays, including tees and bends, shall either be hot dipped galvanised or PVC coated, and where trays are cut, the cut ends shall be adequately rust-proofed and painted with either a cold galvanised paint or a PVC spray respectively to prevent deterioration.

6.4 Cable trays shall be adequately supported at intervals such that the tray does not bend under the weight of the cables. Where supports exceed 1500mm the cable tray shall be reinforced with mild steel angle of adequate section running the length of the tray.

6.5 Each support shall consist of an angle or channel steel brace underneath the full width of the tray with 10mm diameter mild steel rod support, or suitable gallows brackets where the tray is supported from the wall. In the latter case the tray must be spaced at least 50mm away from the wall. All trays shall be free from burrs and sharp edges. Joints in trays shall be made at supports and shall not overhang the supports.

6.6 All cable trays shall be made electrically continuous by means of 25mm x 3mm thick copper link across each break or joint in the system. Connections shall be made by means of brass bolts, flat washers, spring washers and nuts (6mm diameter minimum). At the link position the finish shall be removed within 6mm of the joining strap and the exposed metal primed. The entire system shall be bonded to earth.

6.7 Screws and bolts securing trays to brackets and joining trays shall be arranged so that no damage to cables can occur. Under no circumstances shall cable trays be turned upside down.

6.8 Cables shall be fixed to the tray using proprietary straps, saddles, cleats etc., at intervals specified in the SAZ Wiring Rules for the type and size of cable.

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6.9 Where the installation of cable trays involves the use of bends and tees, these shall be made by fittings manufactured for this purpose and not by cutting or modifying straight tray sections.

6.10 All securing nuts and screws shall be machined brass with a minimum size of 2BA. Where slotting of cable trays is carried out for viable entry or exit, a PVC or equivalent protective edging shall be provided on the edge of the slots.

6.11 Cable trays shall be installed where more than two SWA, MICC, earth cables etc., share a common route.

7.0 LIGHTING, LUMINAIRES AND LAMPS

7.1 The lighting installation has been designed with energy efficiency in mind to achieve a long life and economical running.

7.2 For specification on luminaires refer to the Schedule of luminaires in Appendix.

7.3 All luminaires shall be supplied, installed and tested by the Electrical Sub-contractor.

7.4 All metal work on the luminaire shall be connected to an insulated earth protective conductor.

7.5 The Electrical Sub-contractor shall submit to the Engineer for approval samples of all luminaires prior to manufacture.

Lighting Control Switches

7.6 Lighting control switches shall be of the grid switch pattern with white finished plates.

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7.7 All fixing screws for the switches, socket outlets, spur etc shall be chromium plated of the correct size to the outlet insert.

Luminaires And Lamps

7.8 Luminaires shall be of a type, size and manufacture specified in the particular Specification. The Architect/Engineer reserves the right to request a sample of each type of luminaire for approval prior to the placing of the order.

7.9 Unless specified otherwise, the lampholders shall be formed of insulated high temperature mouldings rigidly mounted on the luminaire body and be of the type to suit the lamp specified. The cable terminations shall be fixed in the lampholder in such a way that the plunger contacts maintain free movement and no strain is placed on the cables.

7.10 Discharge lamp ballasts shall be formed of high conductivity enamelled copper wire windings around a laminated iron core enclosed in a resin filled sheet metal canister.

7.11 Ballasts for tubular fluorescent lamps shall comply with BS 2818.

7.12 Capacitors shall be coiled metallised film construction and enclosed with insulant filled sheet metal canisters. They shall be rupture and leakproof and shall comply with BS 4017.

8.0 WIRING ACCESSORIES

Lighting Switches

8.1 Lighting switches shall be of the white flush plastic or metal clad pattern manufactured in accordance with BS 3676.

8.2 All lighting switches shall be fully rated at 20A and suitable for fluorescent loads.

8.3 All lighting switches shall be suitable for conduit installation. Where more than one phase, or dissimilar voltages are present, then these shall be permanently separated by earthed metal barriers within the switch box.

8.4 The switch plates of phase barrier boxes shall be set square to the vertical and horizontal access.

8.5 Where wall mounted switches are installed on special wall finishes, for example tiles, marble, timber cladding, fair faced brickwork, then special care must be taken to ensure that the final positions of all switch plates are set symmetrically within the pattern of the wall finish and in the correct position as required by the Architect/Engineer.

8.6 Switches used in external locations shall be of the weatherproof pattern.

8.7 Where more than one switch is indicated in a position, then these shall be ganged in the same box and a multi-gang switch plate used.

8.8 The arrangement of switches in a ganged box shall as far as possible be similar to the plan of lighting points which they control. Switches not so arranged shall have engraved labels to indicate switches controlled.

8.9 Pull cord ceiling switches shall be mounted in a standard circular conduit box with a matching "plaster break" ring between.

8.10 An earth terminal shall be provided at every lighting switch or adjustable grid by means of a "Fly Lead" of PVC insulated cable of yellow/green.

8.11 Switches shall be fixed to boxes with adjustable fixings to enable the switch plates to set square to the wall.

General Socket Outlets And Plug Tops

8.12 All socket outlets and plugs shall be supplied and installed in accordance with the manufacturer, type, size and finish as indicated in the detailed Specification and shown on the Contract drawings.

8.13 Unless otherwise specified, all general socket outlets shall be switched, rated at 13 amps and be of the three rectangular pin type to BS 1363.

8.14 The pin apparatus shall have insulated inserts and shall be shuttered on the live and neutral outlets. The shuttering to be arranged such that the entry of the earth pin of the plug top into the earth outlet shall open the shutter.

8.15 Plug tops shall be of the finger shield type to BS 1363. They shall be equipped with fuses rated according to the equipment connected. Where no equipment is connected, 3 amp fuses shall be fitted.

8.16 Earth leakage circuit protection shall be applied to all socket outlet circuits.

8.17 Spur units shall be of 13A rating complying with BS 5733 and shall be fitted with correctly rated fuses according to the equipment connected.

8.18 Where the flex outlet type is specified, these shall have a manufactured outlet and be complete with internal grip cord.

8.19 Where wall socket are installed on special wall finishes, for example tiles, marble, timber cladding, fair brickwork, then special care must be taken to ensure that the final positions of all plates are set symmetrically within the pattern of the wall finish and in the correct position as required by the Architect/Engineer.

8.20 All socket outlets and spur units shall be set square to the vertical and horizontal axes, outlet boxes shall be provided with adjustable fixing.

8.21 Where plates are specified, fixing screws shall be of the identical finish.

8.22 Boxes shall be fixed by means of 2 No 35mm No. 8 cadmium plated steel screws and plastic expansion plugs as a minimum requirement.

8.23 Boxes shall be cleaned out and free from debris prior to wiring. The knockouts shall not be used as a method of grouting boxes into walls etc.

8.24 All plate-fixing holes shall be cleaned and tapped prior to the fixing of screws.

9.0 MOUNTING HEIGHTS AND SPACING OF EQUIPMENT

9.1 Unless otherwise specified in the detailed Specification and/or associated drawings, all units shall be mounted at the following heights from finished floor level taken to the centre of the units:

a)	Lighting switches	1400mm
b)	Socket outlets - general areas	300mm
c)	Above work units etc	1200mm
d)	Isolators	1400mm
e)	Telephone outlets	300mm
f)	Wall mounted telephone outlets	1400mm

g) Generally, switchboards and distribution boards shall be installed so that any item to which easy access is required, such as a fuse, circuit breaker, instrument etc., is not more than 2150mm above finished floor level. In all cases care must be taken to ensure that adequate space is left below and above the equipment for manipulating incoming and outgoing cables and conduits.

9.2 The approximate position of main switchboards, distribution boards, fittings and accessories shall be as indicated on the drawings. Actual positions shall be determined on site in conjunction with the Engineer before the work is commenced. The Electrical Sub-Contractor shall check with the latest Architectural drawings on site to determine door swings before commencing the installation of lighting switch drops.

9.3 The right is reserved to make minor alterations (up to 900mm in route length) to positions prior to the work being carried out without incurring extra charges.

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9.4 Where suspended ceilings are to be installed the Sub- Contractor shall liaise with the ceiling contractor to ensure that the layout and installation of lighting points suits the ceiling panel arrangement.

9.5 Luminaries and accessories shall, where practicable, be sited such that they and water systems cannot be touched simultaneously.

9.6 In areas where the walls have glazed wall tiles the Electrical Sub-Contractor shall note that where the lighting switches or points are mounted in the tiled areas, the switch or socket must be mounted at the intersection of four wall tiles, a large hole shall be left 350mm x 350mm approximately with a length of conduit protruding complete with end and coupling. The final connection shall be made with a short length of conduit when the tile centres are known. The Electrical Sub-Contractor shall allow for this, and also positioning the hole on the brick walls with the Main Contractor.

10.0 EARTHING AND BONDING

10.1 There must be complete EARTH continuity throughout the entire system in accordance with the SAZ Wiring Rules, with all necessary bonding provided and installed by the Electrical Sub-Contractor.

10.2 All conduit connections to distribution boards, luminaires, trunking etc., shall be properly screwed together so as to ensure mechanical and electrical continuity throughout.

10.3 Care is to be taken in bonding and earthing the installation. Tests are to be carried out as the work progresses to check the electrical continuity of all metal work, conduits etc., and protective and bonding conductors.

10.4 The Electrical Sub-Contractor shall be responsible for the bonding and earthing to all exposed metalwork, structural and otherwise.

10.5 All metal sinks and hot and cold water pipes shall be earth bonded. Where these are within 2m of an electrical outlet, then they shall be bonded to same. This bonding to be effected with PVC Yellow/Green sheathed earth wire installed flush to plaster. Connections to be carried out before painting of pipework etc.

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10.6 The whole installation must contain a separate EARTH wire to give a second complete continuity path. Testing of earth path will include both this earth any associated EARTH cable.

10.7 No earth continuity conductors shall be less than 1.5mm tinned copper cable, PVC insulated and coloured Yellow/Green.

10.8 All protective and bonding conductors shall comply with SAZ Wiring Rules.

10.9 The steel wire armouring of the sub-main cables shall be efficiently bonded together and to the respective switchboard, distribution boards, sealing chamber and conduits at which they terminate and to all metalwork adjacent.

10.10 The incoming water services shall be bonded to the electrical earth, as near as practicable to the point of entry to the building. The incoming electrical supply cable and the telephone cable shall be bonded directly to the lightning protection system at the point outside the structure of the Public Utilities side of the service in accordance with the British Standard.

11.0 TESTS

11.1 Conduits and cables shall be tested during the progress of the work before their concealment as follows:

i) Continuity of protective conductors and equip-potential bonds of conduit, metal sheath etc.

ii) Continuity of current carrying conductors.

11.2 Immediately prior to completion and in the presence of the Engineer, the Electrical Sub-Contractor shall carry out the initial inspection and testing detailed in Section thirteen of the SAZ Wiring Rules.

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11.3 Test results are to be documented on test charts containing the following information for each circuit:

i) Earth loop impedance - only the maximum and minimum readings of each circuit of SSO's need be recorded.

ii) Continuity of ring final circuit conductors.

iii) Insulation resistance readings.

iv) Polarity test.

v) RCD test where applicable.

11.4 In addition to the aforementioned information, each chart shall contain details of external characteristics pertaining to the distribution board.

11.5 Following successful inspection and testing, three copies of the Inspection/Test Certificates shall be forwarded to the Engineer within 14 days of the tests being completed, or at the Practical completion, whichever is the sooner. Note that the Engineer will not accept the installations as practicably complete until a Test/Completion is presented.

11.6 The electrical installation has been designed to give load balance across the 3 phases as far as possible but it is the Electrical Sub-Contractor's responsibility to maintain or improve the balance when making connections to busbars etc., with the agreement of the Engineer.

11.7 The Electrical Sub-Contractor shall allow in his tender for checking loads and altering connections in order to achieve as even a balance over the phases as possible and modifying the drawing accordingly.

12.0 OUTLETS RELATED TO ARCHITECTURAL FEATURES

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12.1 Where outlet boxes, draw boxes, lighting and other fittings are to be mounted in position on wall or ceiling panels, tiled surfaces, the Electrical Contractor shall take care that such outlets are mounted symmetrically on these surfaces. It will not be sufficient to scale the position of any outlets directly off the drawings. No extra payment will be allowed where points are not mounted symmetrically and have to be changed.

12.2 Where several outlets are in close proximity, they shall be evenly spaced and lined up.

12.3 The electrical installation is not shown on the Building Contractor's drawings. The Electrical Contractor shall be responsible to ensure that provision is made as required in concrete work for holes, pipes, flush lighting fittings and other equipment and shall warn the main Contractor well in advance of any requirements.

13.0 FIXING OF MATERIALS

13.1 The Electrical Contractor shall fix fluorescent fittings, incandescent fittings, metal draw boxes on surface, industrial surface mounted switches and plugs, metal channels, wiring troughs or trays, cable trays, saddles, conduit accessories, brackets, braces, "Unistrut" and all other metal and non-metal surface-mounted material and equipment only as described hereunder:

13.1.1 Into concrete :- expanding rawl bolts, bolts cast in or gun-bolted with sizes and lengths as approved by the Engineer or as specified.

13.1.2 Into precast concrete:- services shall not be fixed to precast concrete structures unless otherwise specified or approved by the Engineer in writing.

13.1.3 Into brickwork:- expanding rawl bolts or built-in metal fixings of sizes approved by the Engineer or as specified.

13.1.4 Onto steelwork - drilled, gunbolted, tapped and screwed with specified or approved sizes of screws or steel gun-bolt nails or by means of welding where so permitted by the Engineer.

13.1.5 Onto woodwork - fixed by means of wood screws of quantity and sizes as specified or approved by the Engineer. Nails shall not be used.

13.1.6 Into hollow tiles - spring toggles of not less than 6 mm diameter and then only upon specification or approval of the Engineer.

13.1.7 In areas exposed to weather - solid brass bolts, screws and nuts shall be used.

13.2 Where any equipment or material is to be mounted on surface of ceilings, false ceilings, dry wall partitions and other specialised surfaces such equipment or material shall only be mounted as permitted by the Engineer in writing.

13.3 Gun-bolting into concrete shall only be allowed into cast concrete and only after permission has been obtained from the Engineer.

13.4 No gun-bolting shall be undertaken into ash bricks, brickwork, or pre-cast concrete, except where permission has been granted by the Engineer.

13.5 The Electrical Contractor will be held responsible for any damage to builder's work due to unauthorised inadmissible gun-bolting.

13.6 NOTE: The use of plastic plugs, wooden plugs or any other soft substance type plugs are strictly prohibited and the use of these materials will not be approved by the Engineer.

14.0 ELECTRIC GEYSERS

14.1 The supply of electric geysers shall not form part of this Contract, unless otherwise specified. Electric geysers shall be wired with two 4 sq mm conductors and a 2.5 sq mm earth wire in a 20mm diameter conduit from the respective distribution boards.

14.2 Flexible conduit will only be permitted under the following conditions:

14.2.2 Conduit shall be made of galvanised steel with rectangular cross-section corrugations to fit standard brass connectors.

14.2.2 Correct fittings and fixtures shall be used.

14.3 Each geyser shall be protected on the distribution board by means of a double pole mccb or a combined single pole mccb and neutral isolator.

14.4 A 60 ampere double pole switch shall be provided within 600 mm of the geyser.

15.0 SPECIALISED SERVICES

15.1 The following specialised services do not form part of the Electrical Contract, unless otherwise specified, but the facilities for these services shall be provided by the Electrical Contractor as specified:

Air-conditioning Installation

Ventilation Installation

Heating Installation.

Radio and Television Installation.

Intercommunication Installation.

Music Installation.

Bells and Alarms Installation.

Telephone Installation.

Electric Clocks.

Goods Transport System.

Computer Installations.

No-break Standby Installations.

16.0 GENERAL CLAUSES

As Installed Drawings

16.1 As-installed drawings, including diagrams and schedules, shall show all the information necessary so that the installation can be operated, maintained, inspected and tested so as to prevent danger, as far as is reasonably practicable. They shall incorporate the information necessary for the identification of the devices performing the functions of protection, isolation and switching, and their locations. The values of prospective short circuit current and earth fault loop impedance at the origin of the installation shall be recorded on the appropriate system drawing.

16.2 Circuit details including loading, origin route, destination and, where buried, the depth below finished ground level shall be shown for each cable. Conductor size and material and the type of insulation of all cables shall be shown together with number of cores in each cable. Where identification is by colour of the insulation of sheath this shall be shown.

16.3 Where incoming supply cables are installed by others they shall also be shown as described above.

16.4 All earthing conductors, main equipotential bonding conductors, main earthing terminal or bar, protective conductors and supplementary equipotential bonding conductors shall be identified with function, origin, route destination, conductor size and material, type of insulation and, where buried, the depth below finished ground level Test points shall be indicated.

16.5 Earth electrodes shall be identified as to their types, dimensions, material and depth below finished ground level. The nature of the soil and any treatment that has been given to it or fill that has been used in the installation shall be identified.

16.6 Details of each item of equipment, shall include electrical characteristics, classification, degree of protection against ingress of solids and liquids, class of protection against corrosion and manufacturer's name and reference.

16.7 Diagrams shall, where necessary be supplemented with physical arrangement of drawings to assist the location and identification of component parts of equipment.

16.8 During the course of the Works the Sub-contractor shall maintain a fully detailed record of all changes to ensure that the as-installed drawings are in all respects accurate.

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- 16.9 Each drawing shall be on translucent material, other than paper of a standard size A0. The words "AS-INSTALLED" shall be placed in 19mm block letters adjacent to the title block of each drawing together with the name of the site and section of the Works, the title of the installation, the date of completion of the Works, the contract number and the name of the Sub-contractor.

A draft of each as-installed drawing shall be submitted to the Consulting Engineers before final issue is made.

PART B : DETAILED TECHNICAL SPECIFICATION

INDEX

1.0	SCOPE OF WORKS
1.1	BUILDING GENERAL DESCRIPTION
1.2	ELECTRICAL SERVICES GENERAL DESCRIPTION
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1.13	FIRE ALARM INSTALLATION

1.0 SCOPE OF WORKS

The Sub-contract works cover the supply, installations, testing and commissioning of the complete Electrical Services for the **Proposed IPEC Office Phase Two Refurbishment At No.90 Speke Avenue, Harare CBD**

The Contract covers the supply and installation of LV Electrical Engineering services

ELECTRICAL ENGINEERING SERVICES

The electrical supply shall be derived from an 11/0.4kV ZESA supply which shall be located on the stand boundary as shown on the contract drawings.

LV ELECTRICAL SERVICES

The complete LV Electrical Services installation described in this Specification and shown on the Sub-contract Drawings generally comprise the following:

- a) Supply and installation of feeder cables from Existing ZESA supply to ZESA Meter Board.
- b) Supply, Installation, testing and commissioning Main Distribution Board (MDB).
- c) Supply, installation, testing and commissioning of the Sub-Distribution Boards complete with switchgear,

ESDBB1 - Basement	DB1 Aircon	Sub UPS11
SDBB2 - Sprinklers	DB2 Aircon	Sub UPS21
SDB11	ESDBL1- lifts	Sub UPS31
SDB31	ESDBL2- lifts	Sub UPS11

All as shown on the contract drawings.

- d) Supply and installation of feeder cables from ZESA Meter Board to MDB.
- e) Supply and installation of distribution cables from MDB to Generator Set as shown on the contract drawings
- f) Supply and installation of Distribution cables from MDB to Sub-Distribution Boards as shown on the contract drawings.
- g) Supply and installation of Distribution cables from ZESA Meter Board to Sub-Distribution Boards as shown on the contract drawings.
- h) Complete sub-circuit wiring serving lighting and power points from the Distribution Boards.
- i) Supply, installation and commissioning of lighting fittings and lamps.
- j) Supply, installation, testing and commissioning of the Fire Alarm detection System as shown on the Contract Drawings.
- k) Supply and installation of Telephone Boards, trunking, cable trays, ducts and conduits serving the Telephone points including draw wires.
- l) Supply and installation of trunking, cable trays, ducts and conduits serving power points.
- m) Supply and installation of external works and ducting as shown on the contract drawings
- n) Supply as Installed Drawings and Operating instructions.

1.1 BUILDING GENERAL DESCRIPTION

The project comprises the complete wiring of the **Proposed IPEC Offices**

The Building Comprise of :

- Basement
- First Floor
- Third Floor

The buildings are constructed of a concrete frame structure with brickwork partition. Suspended ceiling shall be installed throughout .

1.2 ELECTRICAL SERVICES GENERAL DESCRIPTION

The Electricity Supply shall be derived from 11.0/0.4kV supply.

The Electrical Sub contractor shall install floor mounted, bottom entry, front access only Main Distribution Panel in the LV Switch room. Co-operation will be required with the Main Contractor to ensure that all incoming ducts and cables are correctly arranged to achieve the satisfactory installation of the Panel.

The Sub Contractor before manufacture shall submit a drawing showing the general arrangement and dimensions. The Electrical subcontractor shall be responsible for liaising with ZESA to ensure their requirements are fully met. The Main Distribution Panel shall provide power supplies for lighting and small power for the whole complex. The Electrical Supply shall be 380v, 3phase, 50hz and 220v between each phase and Neutral. All materials and Equipment shall be suitable for these conditions.

Throughout the contract specification, standards have generally been referred to the British standards. Where equivalent (S.A.Z.) Standards Association of Zimbabwe, (S.A.B.S) South African Bureau Standards are applicable they shall be adhered to.

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The C.A.S. Wiring Rules is also referred to throughout the Specification. The complete Electrical Installation shall comply with all local standards and regulations. Should there be any conflict between local standards and what has been specified the subcontractor should draw it to the attention of the Engineer.

1.3 ELECTRICITY SUPPLY

The electricity supply for the Building shall be at 11kV from the local ZESA networks. The ZESA ring feeders shall terminate at their 11kV switchgear in the substation. The Electrical Sub-contractor shall be responsible for liaising with ZESA Engineer to ensure that all their requirements are met.

1.4 LOW VOLTAGE SWITCHGEAR

1.4.1 All switchboards shall be manufactured in accordance with the General Technical specification as set out in section 4 Part A.

- i.) The Subcontractor shall submit to the engineer for approval, fully detailed drawings of all switchboards prior to manufacture.

1.5 LIGHTING

1.5.1 For specification of luminaires refer to schedule of luminaires.

1.5.2 All luminaires shall be supplied, installed and tested by the electrical subcontractor.

1.5.3 Additional supports shall be provided by the electrical subcontractor for the suspended modular luminaires in addition to the exposed "T" section provided by the ceiling Sub-Contractor.

1.5.4 All Luminaires shall be supplied with 1No. 2 metre flexible lead and 5amp plug. The 5Amp plugs are inserted into 5Amp 3pin socket outlets mounted on conduit adjacent to the luminaire.

1.5.5 All metal work on the luminaires shall be connected to an insulated earth protective conductor.

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1.5.6 The electrical subcontractor shall submit to the Engineer for approval samples of all luminaires

prior to manufacture.

1.5.7 Lighting control switches shall be metal clad with white finished plates.

1.5.8 Grid switches shall have 5A or 20A rating, generally where fluorescent discharge luminaires are

controlled switches have 20amp rating where as with low energy PL lamp 5A switches shall be

installed.

1.5.9 All lighting products shall comply with Statutory Instrument 21 of 2017. Electricity (Inefficient Lighting Products Ban and Labeling Regulations 2017)

1.6 CONDUIT, TRUNKING AND CABLE TRAYS

1.6.1 Conduit cast into the structure shall be of black Enamel and galvanised steel conduit shall be installed on surface as specified in the General Technical specification.

1.6.2 Lighting trunking shall be of sheet steel manufacture.

1.6.3 Trunking compartment shall be as detailed on the drawing the electrical subcontractor shall submit samples of trunking prior to manufacture.

1.6.4 Power skirting trunking shall be Cabstrut or approved equivalent in accordance with SABS, SANS 61084-1

1.6.5 The Electrical Sub Contractor shall supply and erect all cable trays, racks, brackets, clips, cleat

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hangers and other steelwork required for supporting the cabling indicated on the contract drawings.

Cable trays shall be adequately supported at intervals such that the tray does not bend under the weight of the cables. Where the supports exceed 1500mm the cable tray shall be reinforced with mild steel angle running the length of the tray.

Under No Circumstances Shall Cable Trays Be Turned Upside Down.

1.7 TELECOMMUNICATIONS WIRING

- 1.7.1 The Electrical Sub Contractor shall be responsible for the supply of telephone cable trays and conduits.
- 1.7.2 The Sub Contractor shall provide and install a steel conduit duct system to contain telephone cables to serve accommodation as detailed on the Drawings.
- 1.7.3 The Telecommunications hardware, cable termination, testing and commissioning of the system shall be carried out by others.
- 1.7.4 The telephone conduits shall be concealed within the building fabric
- 1.7.5 Draw wires shall be provided and left in all telephone ducts and conduits

1.8 EMERGENCY LIGHTING

- 1.8.1 Emergency lighting shall comply with BS 5266 of 1985.
- 1.8.2 The emergency lighting system throughout the building shall be served by self-contained maintained and non maintained luminaires.
- 1.8.3 The self contained, non maintained luminaires shall utilise in built nickel cadmium batteries, inverters, 8W lamp and other accessories with 3 hour battery backup.
- 1.8.4 The live feed shall be taken from the load side of the MCB feeding the lighting circuit.

1.9 STANDBY DIESEL ELECTRICITY GENERATING SET

1.9.0 100kVA DIESEL GENERATOR - OPEN TYPE

The diesel generating set required shall be as follows:-

- a) 1 no. **100kVA** at 0.9p.f 380/220v, three phase, 50Hz and running speed of 1500 rpm, auto manual start standby diesel electric generating set. It shall be capable of providing power outputs at altitude of 1600mm and 32 deg. Celsius ambient temperature.
- b) 1 No **150Amp** triple pole circuit breaker with overload and short circuit protection for the diesel electric generator terminals.
- c) 1 No. 4 pole automatic changeover contactor which shall have mechanically and electrical interlocked mains contactor and generator.

1.9.1 Engine

Heavy-duty industrial diesel engine manufactured in accordance with BSS 5514 and generally to such international standards as DIN, IEC, NEMA. In addition the engine shall be capable of providing a 10% overload for a minimum of ONE hour in any TWELVE-hour period.

1.9.2 Cooling

Radiator and cooling fan complete with protection guards, designed to cool engine at specified output in air-on temperature up to 45°C.

1.9.3 Exhaust

An industrial type silencer supplied complete with flex pipe.

1.9.4 Starting

The engine shall be arranged for starting by means of an axial starter motor engaging on a toothed ring on the flywheel.

1.9.5 Batteries

The battery shall be of the high capacity, maintenance free lead acid type and complete with leads. The battery rack shall be mounted on the generator base frame.

1.9.6 Charging

Dual charging of these batteries shall be provided by means of an engine driven charge alternator and a constant potential battery charger mounted within the control panel.

1.9.7 Alternator

Brushless design screen protected, fan ventilated, drip-proof, self-exciting in accordance with IP22. Fitted with heavy-duty long life bearings, lubricant packed for 4000 hours operation. Constructed in accordance with BSS 5000 part 99.

1.9.8 Regulation

Voltage regulation shall be maintained within the limits of $\pm 1.5\%$ from no load to full load including cold to hot variations at any power factor between 0.8 lagging and unity and inclusive of a speed variation of 4.5%. Nominal voltage shall be set by means of a trimmer mounted within the terminal box before dispatch.

1.9.9 Insulation

Stator and rotor insulation shall be Class “H” standard.

1.9.10 Suppression

Radio and Television suppression shall be provided to comply with BSS800/1983.

1.9.11 Base Frame

The complete generating set shall be mounted as a whole on a heavy duty steel base frame.

1.9.12 Anti-vibration Mountings

Mountings are affixed between the engine alternator assembly and the base frame.

1.9.13 Fuel Tank – Set Mounted

The fuel tank forms an integral part of the baseplate and has a capacity of 6-8 hours operation. The tank is complete with contents indicator, fuel fill cap with breather, fuel feed/return lines to engine and drain plug. Inclusive of float switch and solenoid valve (for fitting additional) external fuel tank)

1.9.14 Coupling

The engine shall be directly coupled with the alternator by means of an SAE flange so there is no possibility of misalignment after prolonged use.

1.9.15 Guards

The fan, fan drive and battery charging alternator drive are fully guarded for personnel protection. A stone guard protects the radiator core from accidental damage.

1.9.16 Control Panel

To be manufactured from sheet steel and mounted at the rear of the set.

The Panel will contain:-

- Ammeters with selector switch
- Voltmeter with selector switch
- One frequency meter
- One hours run meter
- One oil pressure gauge
- One water temperature gauge
- One battery condition voltmeter
- One Off/Man/Auto/ selector switch
- One emergency stop button
- One overspeed shutdown
- One 3 attempt to start timer
- One lamp test push button
- One low pressure shutdown and indication
- One high engine temperature shutdown and indication

1.9.17 Circuit Breaker

3 pole moulded case circuit breaker of sufficient capacity.

1.9.18 Method of Operation

The plant shall be designed for fully automatic mains failure operation when the mode selector switch is in the auto position. On a mains failure the generator will automatically start, and on reaching working speed will take over the load until the mains returns. The unit will then close down and await the next mains failure. When the mode selector is in the main position the generating set can be

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started by turning the plant control key to run. The unit will not take over the load in this position. With the mode selector in the OFF position the generator will not start.

1.9.19 Changeover Switch

Wall / Floor mounting intelligent automatic changeover switch consisting of two mechanically and electrically interlocked 4 pole contactors for mains/alternator load transfer.

1.9.20 Paint Finish

The units shall be sprayed with two undercoats and finished with tow coats of oil proof enamel.

1.9.21 Governor

Mechanical complaint with BS5514, class A1

1.9.22 Electrical System

12V D.C. electrical system complete with energize to run shut down solenoid. Oil pressure and water temperature shut down switches and gauge senders.

1.9.23 Engine Protection

Low oil pressure and high water temperature protections are provided as standard.

1.9.24 Filters

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Filters are provided for:-

Fuel oil

Lubricating oil

Air intake

SCHEDULE OF RECOMMENDED TOOLS AND SPARES

Tools for Diesel Generator Sets Including Tool Cabinet

1. Set spanner
2. Set screw drivers
3. Pliers
4. Torque Wrench
5. Feeler Gauge
6. Valve Extractor

Spares for Engines

1. 6 Oil filters
2. 6 fuel filters (x 2 sizes)
3. 4 fan belts
4. 6 air filters
5. 2 safety elements
6. 2 rocker cover gaskets

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1.10 UNINTERRUPTABLE POWER SUPPLY

The Uninterruptable Power Supply required shall be as follows:-

20,000 VA (20kVA) extended run tower UPS ,3-phase hardwire input (220/380, 230/400, 240/415 VAC),Single-phase hardwire output (user-selectable 220 or 230 or 240V AC), Zero transfer time, on-line, double-conversion operation and 3 communication ports, card slot and EPO jack

- a) UPS shall provide pure, sine wave AC output at all times
- b) Maintains continuous operation through blackouts, voltage fluctuations and surges with zero transfer time.
- c) Removes harmonic distortion, electrical impulses, frequency variations and other hard-to-solve power problems.
- d) 20,000VA/8,000 watt power capacity with hardwire input/output connections.
- e) 220/380 or 230/400 or 240/415V AC input and regulating output within 2% of user-selectable 220 or 230 or 240V AC output (single-phase, 2-wire).
- f) UPS Shall have a battery module which provides 5 minutes runtime at half load (10,000VA) and 4 minutes runtime at full load (20,000VA).
- g) Extremely efficient operation (up to 97% efficient in Economy Mode).
- h) Expandable runtime with multiple external battery modules.

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- i) 3 communication ports (RS-232, contact closure and AS-400).

- j) Slot for optional card.

- k) Manual bypass switch as well as an automatic bypass function shall ensure 100% availability of connected equipment by safely passing through AC power when the power module requires maintenance.

- l) Battery Start Switch shall allow cold restart of UPS during a prolonged blackout to utilize its batteries for periodic system access or data retrieval.

- m) PowerAlert Universal UPS Power Management Software and 6 ft. communication cable shall be included.

- n) Combination LCD/LED display.

- o) Built-in Emergency Power Off (EPO) interface supports remote emergency shutdown

Contractor to furnish Engineer with copy of Uninterruptable Power Supply specification.

1.11 VOICE AND DATA COMMUNICATION

1.11.1 Description

This specification document covers the supply, installation, testing, commissioning and maintenance of integrated voice/data cabling systems to be installed at NAC Offices

The work generally consists of the following:

- Integrated voice and data cabling;
- Installation of lead-in conduit;
- Installation of Main Distribution Frame;
- Category 6 backbone and horizontal cabling for both data and phone services1;
- Category 6 patch leads as applicable;
- Telecommunications racks;
- Provide Telecommunications Earthing in accordance with ANSI
- Supply and installation of a cable support system including all necessary cable tray, conduits, catenary, PVC and metal cable ducts.

1.11.2 Requirements

The work shall be performed by a Qualified cable Installer, approved and registered with relevant authority.

1.11.3 Telephone Main Distribution Frame (MDF)

- Supply and install a telephone cabling MDF complete with lockable enclosure in the location shown on the drawings.
- Use modular cable terminations of the insulation displacement connection

type (Krone or approved equal) to accommodate the number of cable pairs shown on the drawings.

- Provide an MDF with sufficient modules to terminate and cross connect telephone lead-in, backbone and future PABX cables.

1.11.4 Communication Rack/Cabinet(s)

Provide communication rack(s) which have the following features:

- Type : 19 inch metal frame to ANSI/EIA 310-D, ventilated metal sides.
- Power outlets : Minimum 6 rear mounted on power rail supplied with rack.
- Capacity : As shown on the drawings
- Doors : Metal, lockable door with acrylic panels.
- Cable Organisers : 'D' rings for vertical runs front and back. 'D' rings for horizontal runs provided for at least every 2 RU of patching.
- Colour : Approved by client
- Size : Sufficient for rack mounted patchable frames to accommodate the following:

- Category 6 horizontal and backbone cabling
- Telephone backbone cabling and connection to MDF

1.11.5 Cabling

1.11.5.1 Horizontal Cabling

The horizontal cabling system provides connection between the Communications Rack and the telecommunication outlets (TO). It consists of horizontal cabling, connecting hardware and termination outlets. The contractor shall supply all termination hardware and horizontal cables to connect to each termination outlet from the floor distributor.

Unless specified, all horizontal cables shall be riser rated 24AWG 4 pair unshielded twisted pair (UTP) and shall be Category 6 performance as specified.

Horizontal cables shall run in star topology from the floor distributor to all telecommunication outlets. All horizontal cabling shall be supported and protected.

The maximum length of each individual cable run of horizontal cable from the floor distributor to each floor telecommunication outlet shall not exceed 90 meters.

1.11.6 Cable Terminations

1.11.6.1 UTP Cable Termination

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Provide all termination frames and modules. Terminate all cabling and complete all jumpering.

Maintain standard pairing to ensure that balanced pairs are provided in a continuous run between the outlet and the relevant Communications rack. Consolidation points must not be used.

Maintain twist rates up to 10mm for Category 6 from the actual termination.

Remove the minimum amount of cable sheath.

Sequence Ports: Terminate block cable pairs sequentially. Do not allow pairs from other cables to break the pair sequence. Confirm sequencing requirements with the Superintendent.

Numbering: Number termination frame modules using the manufacturer's approved labelling system to indicate pair numbers to the approval of the Superintendent. Provide printed labels on modules to identify functional groups.

1.11.7 Telephone Cable Termination

Terminate telephone backbone cables onto RJ45 patch panels (one pair per port).

1.11.7.1 Telecommunications Outlets

Unless shown otherwise, outlet cover plates shall be Clipsal 2000 series or approved equal.

UTP RJ45 Outlets

Flush plates: Use Clipsal 2000 series flush plates or approved equal. (Match flush plates specified in Electrical Services section).

1.11.8 Identification

1.11.8.1 UTP (RJ45) Outlets

Uniquely number each outlet to indicate the outlet number and its associated Distributor. Label each outlet by engraving the faceplate with the outlet number using 5mm high black lettering. Outlets to be numbered sequentially based on a logical numbering plan.

1.11.8.2 UTP Patch Frames

Label patch frames and patch panel posts in sequential order.

1.11.8.3 Surge and Transient Protection

Provide surge and transient protection devices to the telephone lead-in copper cabling.

Type: Multi-stage with fast acting secondary clamp;

Selection Example: Critec SLP10-K3F or approved equal.

1.11.9 Cable Support Systems

UTP Patch Panels

Provide UTP Patch Panels with the following features:

- 16 inch rack mounted, 24 port high density RJ45 with rear and front cable management. (48 port patch panels are not advised due to the difficulties they cause in cable management).
- Rear Termination: High density IDC.

1.11.10 Patch Panels

Patch panels installed in Krone locations shall be a shielded 24 port patch panel (Krone 7022-1-155-24 – includes integrated cable management). Each installed patch panel should have a rear cable management bar which is attached to the back of the patch panel by screws example: Krone TPNP-NNC10-WM-BKT or Krone Mastermind Rear Cable manager p/n 6450-1-090-00.

1.11.11 24 Port Power Over Ethernet Switch

The 24 port switch shall provide 24 10/100/1000Mbps ports that supports 802.3at/af-compliant PoE, with a total PoE power supply up to 180W, powerful and flexible enough for users to deploy wireless access points or IP-based network surveillance cameras. The switch shall be equipped with 4 combo SFP slots, that shall make network expansion flexible.

It shall have Quality of Service (QoS, L2 to L4) provided by enhanced traffic management capabilities to move data smoother and faster.

It shall support 24 ports of IEEE 802.3at/af-compliant PoE and shall have a total power supply of 180W to power any 802.3at or 802.3af compliant power device. It shall have capacity possible to work with wireless access points, surveillance cameras, IP phones and other PoE supported devices,

Features

It shall integrate voice, data and video service on one network,

Power Over Ethernet (POE)

- Standard: 802.3at/af compliant
- PoE Ports: 24 Ports
- Power Supply: 180W

Layer 2 Features

- Link Aggregation Control Protocol (LACP)
- Up to 512 VLANs simultaneously(out of 4K VLAN IDs)
- STP/RSTP/MSTP
- IGMP Snooping
- LLDP(LLDP-MED)

Quality of Service

- 4 priority queues
- Support IEEE 802.1P Priority
- DSCP QoS
- Rate limit feature

Security Strategies

- Access Control List (L2~L4 ACL)

PART V BILL OF QUANTITIES

- Port Security
- Storm Control
- SSL and SSH encryption

Management

- Web-based GUI
- Command Line Interface
- SNMP v1/v2c/v3
- RMON (1,2,3,9 group)

1.11.12 Design Guidelines

Cable Risers and Pathways

- Cable risers and pathways to be independent from all other services
- Main cable pathways shall be cable tray or steel wire basket form
- Shall allow for 25% spare capacity for future growth
- Shall be fire rated where the cabling traverses floors or fire rated building infrastructure as required by Building Code of Zimbabwe
- Cable pathways above solid or feature ceilings to be cable tray or cage, with appropriate access panels to be installed for future access

Horizontal Cabling and Data Outlets

- Horizontal cabling to be a shielded structured cabling system, at least Category 6A, with shielded RJ45 terminations at each end
- Horizontal cabling to be no more than 90m from frame to wall outlet termination
- Wall outlets at workstations are to be at least double outlets
- Ceiling mounted outlets and in-ceiling data outlets for wireless access points are to be positioned as per World Bank infrastructure representative direction and standards.

PART V BILL OF QUANTITIES

- Cat 6A cabling for wireless is to have a 3m service loop to allow for extending of position.

Labelling of cabling infrastructure

- Labelling as per World Bank Cabling Specifications

Test results, Documentation and Record Books

- Shall be provided to allow for the ongoing use and maintenance of the cabling infrastructure
- Record books for voice and data services to be provisioned and updated
In all telecommunication rooms
- Test results and as-built drawings for all cabling infrastructure to be provided on completion of works and be provided to the World Bank infrastructure representative

Acceptance and handover

- It is a requirement that all works adhere to the above guidelines and to specifics outlined in order for acceptance, handover, and any associated payments for works to take place
- Acceptance of telecommunication room to include the cleaning of the communications room floor, inside the cabinets and frames and wipe down of cabinets, racks and associated infrastructure, so as to prevent the ingress of building dust in active network equipment once installed.

1.11 AUTOMATIC VOLTAGE REGULATOR / STABILIZER

1.11.1 The Voltage Regulator shall offer protection against over voltage, over current, phase shortage and phase sequence. The line voltage shall be 380V $\pm 15\%$ or phase voltage 220V $\pm 20\%$. The Automatic Voltage Regulator shall be located in the basement.

1.11.2 Features

1.11.2.1 Continuous Steepless Linear Voltage Regulation

The contact less inductive transformer shall be the linear voltage regulation. There shall be no tap from the transformer, so there shall be no coupling noise and voltage drop shall be low.

1.11.2.2 Arch Discharge (Sparkle)

There shall be no contact point inside the transformer.

1.11.2.3 High Efficiency

The winding of transformer shall be made of high purity oxygen free copper wire, the copper loss shall be low and the temperature rise shall be slow. The core of transformer shall be made of high magnetic density silicon-steel plate, the no-load current shall be low.

1.11.2.4 Long lifespan and severe environment tolerance

There shall be no any contact surfaces or worn out components inside the transformer. The regulator shall tolerate severe temperature, humidity, vibration and dust.

1.11.2.5 Reliable modular design

A complete modular design, for easy sales services and debugging. All the components shall be standardized, all the PCBA shall be parallel connected to the main control board.

1.11.2.6 Advanced protection function

The Intergrated automatic protection circuit shall offer a full range of protection to protect the machine and the loads. When output voltage is exceeding the upper or lower limit, or open phase happens, the outputs shall be cut off and give warning (LED+Buzzer).

1.11.2.7 Strong overload ability

PART V BILL OF QUANTITIES

When short circuit happens on the loads or overloaded in short time, the transformer shall not be damaged. 100% load for long time, 150% for 30seconds, 200% for 10seconds, 300% for 5 seconds.

1.11.2.8 Output precision adjustable

The output precision shall be $\pm 2\% \sim \pm 10\%$ adjustable through the jumper on the regulation board.

1.11.2.9 Manual by-pass

The stabilizer shall be connected to the mains through fully isolated manual bypass switch.

1.11.2.10 Automatic by-pass (optional)

The stabilizer shall automatically switch to bypass mode when input voltage is within the range, while the output is out of range.

1.11.2.11 Surge protection device (optional)

Additional surge protection device shall be added to depress the surge and spike from the mains power.

1.12 FIRE ALARM INSTALLATION

1.12.1 The Fire Alarm system to be installed shall be fully automatic with Continuous monitoring of all elements, circuits, modules, break glass units and fire alarm bells.

1.10.2 The Fire Alarm Control Panel shall be supplied with a 24 Volt sealed lead acid battery fitted integral in the indicator panel, supplied with the number of zones shown on the drawings.

1.12.3 Break Glass Units

- (a) Break Glass units shall be of the closed type to enable circuits to be monitored on fail-safe basis.
- (b) Units shall be flush mounted throughout the building.
- (c) Each break glass unit shall have a switch test facility.

1.12.4 Alarm Bells

- a) Alarm sounder shall be located throughout the building to give a minimum sound level of 65dB or 9dB above room background noise.
- b) Alarm bells shall be electronic type suitable for low power consumption up to a maximum of 15Watts
- c) Alarm circuits shall be fully monitored from the control panel.

1.12.5 Wiring and Installation Systems

The fire alarm system shall be operated via its dedicated network of cables.

The entire installation shall be done in such a way that tampering is only possible with the greatest difficulty. Cables shall comply with SABS150 OR SABS 168 as relevant for fire resistance interconnection between fire alarm bells and the Control equipment

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The following group of cables shall be utilized.

- (a) Mineral insulated copper sheathed cable MICC
- (b) Fire resistant cable
- (c) Flame retardant PVC insulated cable in rigid PVC conduits
- (d) PVC insulated cables in steel conduit with additional fire protection.

All wiring networks shall be adequately protected against mechanical damage or rodents.

PART 5 – BILL OF QUANTITIES

PREAMBLE TO BILL OF QUANTITIES

5.1 The schedule of Prices contained within the Bill of Quantities shall be read in conjunction with the conditions of contract, the Specification and the Drawings.

5.2 The rates and prices in the Schedule of Prices shall be deemed to cover all the Contractor's obligations under the Contract and all matter and things necessary for the proper completion and maintenance of the works.

5.3 A rate of price is to be entered against each item in the Bill of Quantities. A "NIL" or zero price is not considered an acceptable price.

5.4 Except where advised in writing by the Engineer to the contrary, all items are measured nett in accordance with the drawings, no allowance has been made for waste or contingent work.

5.5 The Contractor must note that materials for the Contract are to be ordered from the working drawings, checked where necessary from site measurements. They may not be ordered from either the Schedule of Prices or the Contract Drawings without the written Permission of the Engineer.

5.6 Contractors are required to use materials produced or manufactured in Zimbabwe, providing that the price, quality, and delivery of local material is satisfactory.

5.7 Where an item in the schedule of prices is described as "Provisional" the items shall hold good any variation in quantity measured as compared with quantity provisionally billed.

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APPENDIX 1 – SCHEDULE FORMS

Form 1	Tender Offer	
Form 2	Price Summary	
Form 3	Equipment Offered	
Form 4	Alternative Offer	
Form 5	Tender Query Sheet	
Form 6	Certificate of Bona Find Tendering	
Form 7	Tenderer's Capability To Finance Project	
Form 8	Schedule Of Works Of A Similar Nature	Carried Out By Tenderer
Form 9	Schedule of Supervisory Staff	
Form 10	Daywork Rates	
Form 11	Intended Program Of Works	
Form 12	Certificate Of Attendance Of Visit At Compulsory Site Visit	
Form 13	Confidentiality Form	

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FORM 1 : TENDER OFFER

Name of Contract :*Proposed Offices in Harare for Insurance and Pension Commission (IPEC).*

To: *Insurance and Pension Commission*

GENTLEMEN

Having examined the tender and specifications for the above named Works, we offer to install, complete, and maintain the whole of the said Works in conformity with the Conditions of Contract, Specification and save as amended by the modifications for the sum of:-

	\$.....
	(in words)

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

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In the event of there being any errors of extension or addition in the priced Bill of Quantities, we agree to their being corrected, the rates being taken as correct.

We undertake to complete and deliver the whole of the Works comprised in the Contract within the time stated in the Appendix hereto.

If our tender is accepted, we will, when required and within the time stipulated, provide good and sufficient Surety or obtain the guarantee of a Bank (to be approved in either case by you) to be jointly and severally bound with us in a sum not exceeding 10%(ten per cent) of the value of works for due performance of the Contract under the terms of Deed of Surety ship in the form annexed hereto. The Surety we propose is

We wish/do not wish to exercise the option of providing a Surety or Guarantee in lieu of Retention Money.

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

I/We hereby agree that this tender will hold good and be open for acceptance or ninety days(90) from the date of opening.

I/We hereby undertake to deliver the above goods or carry out the services within the following period.

Delivery Period
------------------------	-------

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

Period of Validity of Tender 90 days from time of closing

Yours faithfully,

Address.....

.....

.....

Signature:

On behalf of and duly Authorised by.....

Date.....

(Seal)

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FORM 2: PRICE SUMMARY

ITEM	DESCRIPTION	TOTAL SUM
1	BID Sum (Total Sum contained within The BILL OF QUANTITIES)	
2	Contract Sum (TOTAL ALTERNATIVE OFFER WHERE AVAILABLE) If there is no alternative offer please insert N/A	

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Date.....

Signature.....

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FORM 3: EQUIPMENT OFFERED

The tenderer shall complete the schedule below, giving the name of manufacturer whose material or equipment he proposes to employ and on which his tender is based.

	Description	Manufacturer Supplier	Country Of Origin	Warranty Period	Delivery Period
1	Main Distribution Board				
2	Sub Main Distribution Boards				
3	ZESA Meter Board				
4	Cables				
5	Cable tray				
6	Lighting Luminaires				
7	Trunking				
8	Wiring Accessories				
9	Fire Alarm				
10	Generator				
11	UPS				
12	AVR				
13					
14					
15					
16					

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17					
18					

The Tenderer is required to complete the table below to show all sub-contractors he proposes using on the contract.

	Services	Name of Sub- Contractor
1	Fire Alarm	
2	UPS Installation	
3	*Data and Voice	
4		

*** Ensure that Data and voice Sub-Contractor is POTRAZ and KRONE certified**

IMPORTANT: *The subcontractor shall submit copies of quotation from suppliers for which his price is based. This should indicate actual landed price including discount but excluding the subcontractor's mark-up.*

The engineer will not consider a tender where the quoted prices are lower than the supplier's price.

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Date.....

Signature.....

FORM 4 : ALTERNATIVE OFFERS

If any of the tenderers wishes to make any alternative offers he shall give full details below indicating any price reduction or addition which would result and his reason for wishing to offer alternatives.

It must be understood that the tender figure must be for all items specified whether alternatives are offered or not.

If there are no alternatives the tenderer shall write "NIL"

ITEM	REASON	PRICE COMPARISON

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Date.....

Signature.....

FORM 5: TENDER QUERY SHEET

Should the Tenderer have any queries regarding the interpretation of the Tender document, they shall **be made in writing and addressed to**

The Procurement Chairperson

Insurance Pension Commission,

160 Rhodesville Avenue,

Harare.

Tel: +263 242 749012

email: enquiries@ipec.co.zw

Cc

Reclon Consultants – email : adminbyo@reclon.org

Responses to queries shall be made to all tenderers before the tender closing date, without disclosing the source of the query.

QUERY	ANSWER

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Date.....

Signature.....

FORM 6: CERTIFICATE OF BONA FIDE TENDERING

To: **IPEC**

We declare and certify that neither we nor anyone, including any of our directors, employees, agents, joint venture partners, consultants or sub-contractors, where these exist, acting on our behalf with due authority or with our knowledge or consent, or facilitated by us, has engaged, or will engage, in any Fraud and Corrupt Practice (as defined below) in connection with the tendering process or in the execution or supply of any works, goods or services for **Harare Offices**, (the “Contract”) so inform you if any instance of any such Prohibited Practice shall come to the attention of any person in our organisation having responsibility for ensuring compliance with this Certificate.

We shall, for the duration of the tender process and, if we are successful in our tender, for the duration of the Contract, appoint and maintain in office an officer, who shall be a person reasonably satisfactory to you and to whom you shall have full and immediate access, having the duty, and the necessary powers, to ensure compliance with this Certificate.

We declare and Certify that, except for the matters disclosed in this Certificate of Bona Fide Tendering:

- (i) we, our subsidiaries and affiliates, and all of our directors, employees, agents or joint venture partners, where these exist, have not been convicted in any court of any offence involving a Prohibited Practice in connection with any tendering process or provision of works, goods or services during the ten years immediately preceding the date of this Certificate;
- (ii) none of our directors, employees, agents or a representatives of a joint venture partner, where these exist, has been dismissed or has resigned from any employment on the grounds of being implicated in any Fraud and Corrupt Practice;
- (iii) we, our subsidiaries and affiliates and our directors, employees, agents or joint venture partners, where these exist, are not prohibited from participation in a tendering procedure on the grounds of having been found by the final judgment of a judicial process or a finding by the enforcement (or similar) mechanism of another international organisation to have engaged in a Prohibited Practice;
- (iv) we, our subsidiaries and affiliates, as well as any subcontractors, or suppliers or affiliates of the subcontracts or supplier are not subject to any sanction imposed by resolution of the United Nations Security Council.

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If applicable, provide full disclosure of any convictions, dismissal, resignations, exclusions or other information relevant to Articles i) ii) iii) or (iv) in the box below.

Name of Entity Required to
be Disclosed

Reason Disclosure is Required

For the purpose of this Covenant, the terms set forth below define Fraud and Corrupt Practices as:

- (i) “corrupt practice” which means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
- (ii) “fraudulent practice” which means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
- (iii) “coercive practice” which means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party; and,
- (iv) “collusive practice” which means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party
- (v) “theft” which means theft which means the misappropriation of property belonging to another party.

Following the submission of our tender, we grant the employer, the **IPEC** and/or persons appointed by them, the right of inspection of our, and any proposed subcontractors, accounts and records and permission to have any such accounts and records audited by auditors appointed by the **IPEC** , if required by **IPEC**. We accept to preserve these records generally in accordance with applicable law but in any case for at least six years from the date of substantial performance of the Contract.

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We further declare that no affiliate of the Employer is participating in our tender in any capacity whatsoever.

Dated this day of year

.....

(signature)

In the capacity of

Duly authorized to sign this tender for and on behalf of

.....

(position)

.....

(name of tenderer)

Date.....

Signature.....

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FORM 7: TENDERER CAPABILITY TO FINANCE PROJECT

The tenderer accepts that this contract is a **SUPPLY AND FIX** contract and therefore shall avail financial resources that enable him to execute the tendered works.

The tenderer shall detail in the table below locally produced or imported materials and or equipment that the tenderer **DOES NOT** have the capacity to finance and will inhibit his ability to execute the works. The client reserves the right to accept or reject the tender should the amount of financial requirement exceeds 30percent of contract sum.

Item	Description	Country of origin	Amount

Signed.....

Date.....

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**FORM 8: SCHEDULE OF WORKS OF SIMILAR NATURE CARRIED OUT BY
TENDERER**

CLIENT	NATURE OF WORK	VALUE	COMPLETED/ CURRENT

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Date.....

Signature.....

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FORM 9: SCHEDULE OF SUPERVISORY STAFF

Give the names, qualifications and experience of the key supervisory and resident staff the Contractor proposes to employ on the works and indicate whether the employee's services will be available on a full time or part time basis

The contractor shall submit copies of qualification certificates for all key personnel up to Artisan level. Failure to submit will render the tender invalid.

Schedule of Key Personnel

	NAME	QUALIFICATIONS	EXPERIENCE
Project Manager			
Project Supervisor			
Site Foreman			

Schedule of Skilled and semi skilled team on site

	NAME	QUALIFICATIONS	EXPERIENCE
Artisans			

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Assistants			

We hereby certify that the above information is correct and it is our responsibility to provide whatever staff is required to complete the works in accordance with the Contract.

Signed

Date

FORM 10: DAYWORK RATES

The following rates shall be used for cost purposes where work other than work shown on the Drawings and/or in the Bill of Quantities is carried out.

The Tenderer are advised that the rates for Dayworks is part of your tender and the rates contained therein shall be used as factor for Contract award purposes.

LABOUR (Per Hour Normal time)

Foreman

\$.....Per Hour

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Skilled Electrician Class 1 \$.....Per Hour

Assistant(Semi-skilled) \$.....Per Hour

PROFIT ON MATERIAL

Mark-Up%

The Engineer's approval in writing shall be sought before commencing any Dayworks otherwise claims will not be accepted.

FORM 11: INTENDED PROGRAMME OF WORKS

The Tenderer shall attach to the tender documents his intended program of works. The tender shall be based on a five (5) day working week.

Signed.....

Date.....

FORM 12 : CERTIFICATE OF ATTENDANCE OF VISIT AT COMPULSORY SITE VISIT

This is to certify that

Contractor's Representative Name:

Contractor Name:.....

Attended the compulsory site visit at

.....

On.....

Signed by the Employer's Representative:

Name:

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Signed:

Date:

FORM 13 : CONFIDENTIALITY FORM

I.....

(Full name)

Representing.....

(Company name)

Undertake to be bound by the confidentiality clause, wherein in the event of winning or losing the tender I shall not disclose any information (written, verbal or other form) obtained during the performance of the assigned duties. I shall remain confidential and will undertake not to communicate the information to a third party unless there is express authorized permission to do so. This includes all information about IPEC, associate organizations, members, clients, employees, investments, projects, reports submitted to the Board, agreements between the Authority and its clients as well as any other information otherwise marked or known to be confidential.

Any unauthorized release or careless handling of this confidential information is considered a breach of duty to maintain confidentiality on my party and my organization.

Furthermore, it has been brought to my attention that any breach of duty to maintain confidentiality could be grounds for possible liability in any legal action arising from such breach or sanctions from the IPEC Board.

Signature

Date

.....

.....

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APPENDIX 2 –

SCHEDULE OF LUMINAIRES

TYPE A

1200mm totally enclosed, surface mounted, heat resistant lighting luminaire. Consists of polycarbonate construction and stainless steel mounting clips. Compete with 47w LED lamps.

Approved Similar or Equivalent to REF : Luceco-LCL12W44S40



TYPE A1

Similar to A with emergency version maintained 3hours

TYPE B

600 x 600 backlit frameless panel. Complete with 23W panel

Approved Similar or Equivalent to REF: LUCECO LPB 66H35S40



TYPE B2

600 x 600 backlit frameless panel with surface mounting frame. Complete with 25W panel

Approved Similar or Equivalent to REF: LUCECO LPS66W28S40



TYPE B3

Similar to B2 with emergency version maintained 3hours

TYPE C3

235mm diameter surface mounted bulkhead. Consists of white polycarbonate base, opal diffuser. Complete with 9.5w LED lamp.

Approved similar or equivalent to Ref: Voltex-commercial : J24196



TYPE C1

Similar to C3 with emergency version maintained 3hours

TYPE C

240mm diameter Surface mounted ceiling circular bulkhead lighting fitting comprising corrosion and vandal proof white polycarbonate base and opal diffuser complete with 2x9WPL lamp.

Approved Similar or Equivalent to REF: VOLTEX B70-2PL9



TYPE D

95mm diameter recessed basic round tilting downlight. Body and base in die-cast aluminium. Complete with 10w LED lamp.

Approved Similar or Equivalent to REF : Spazio : 2049 RND TILT – WHITE



TYPE D1

Similar to D with emergency version maintained 3hours

TYPE D2

150mm diameter recessed VILLA downlighter. Complete with 15w LED lamp.

Approved Similar or Equivalent to REF : Voltex-led-lifestyle J17237.



TYPE D3

Similar to type D2 with emergency version maintained 3hours

TYPE D5

68mm diameter recessed downlighter. Body consists of moulded plastic trim ring with frosted lens. Complete with 10.5 LED lamp.

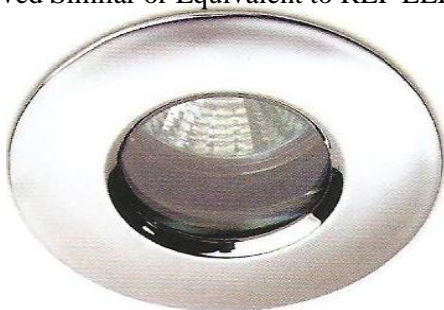
Approved Similar or Equivalent to REF : Voltex : FUT7-10.5-LED-830



TYPE D8

85mm diameter Decorative downlighter with tempered glass. Complete with 10w LED lamp.

Approved Similar or Equivalent to REF LEDS C4 Hospitality 320-CR



320-CR

EXIT SIGN

An attractive emergency maintained exit box ideally suited as surface mounted luminaire in new or existing buildings. The luminaire comes complete with a 1 X 8W lamp -

Approved Similar or Equivalent to REF VOLTEX - LILI



TYPE E

Similar to B with emergency version maintained 3hours

Approved Similar or Equivalent to REF LUCECO LPB 66H25S40

TYPE G

266mm diameter wall mounted IP65 rated luminaire. Consists of opal polycarbonate diffuser, chemically treated and epoxy powder coated body. Complete with 17.5w LED lamp.

Approved Similar or Equivalent to REF : VOLTEX Professional LASCON ROMA LED



TYPE G1

Outdoor decorative wall mounted light fitting. Consists of die-cast aluminium body with polycarbonate lens. Complete with 14w LED lamp.

Approved Similar or Equivalent to REF Radiant : LS464



TYPE G2

Spotlight made of high quality aluminium and a tempered glass diffuser complete with 5W LED Lamp

Approved Similar or Equivalent to REF : LED.C4 (Outdoor) 05-9416-Z5-37



TYPE L

1200mm surface mounted luminaire. Cold rolled mild steel with a white epoxy powder coated finish. Complete with 2x18w LED tubes. Approved Similar or Equivalent to REF VOLTEX (commercial lighting) VEC-218-LED



TYPE L1

1500mm surface mounted luminaire. Cold rolled mild steel with a white epoxy powder coated finish. Complete with 2x22 w LED tubes . Approved Similar or Equivalent to REF : VOLTEX (commercial lighting) VEC-222-LED



TYPE L2

Similar to type L with emergency version maintained 3hours

TYPE S1

Flexible 5metre 12V LED Strip light with a high lighting efficiency for indoor use. The White version shall have a wattage of 78W (16,6w/m). It shall enable 5m to be connected and the possibility of cutting strip every 3LEDs

Approved Similar or Equivalent to REF: LEDS.C4 Architectural

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RAD -91-3417-00-00, Length of Strip light 21m (25m)



TYPE U

150mm diameter pendant luminaire with adjustable cord suspension. Consists of steel shade with frosted glass. Complete with 6w LED lamp. Approved Similar or Equivalent to REF :
Eurolux P280



Legrand 8 module pop up floor box

The floor box to be of slim design for perfect integration into the floor or office furniture. Equipped with “push and slide” locking system to avoid accidental opening by feet. Box made of steel and consists of 8 modules :

- (1x13Amp Standard Single Switched Socket Outlet on non- essential,
- 3x13Amp Non-Standard Single Switched Socket Outlet on essential,
- 1xTelephone Outlet - RJ45,
- 3xData Outlet - RJ45)

Approved similar or equivalent to Legrand 054028



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SPEKE AVENUE, HARARE CBD**

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APPENDIX 3 –

Sub Distribution Board Schedule

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SPEKE AVENUE, HARARE CBD**

PROCUREMENT REFERENCE NO:

PART VI APPENDICES

RECLON CONSULTANTS 33 Bayswater Road Highlands P.O. Box BE 744 Harare Tel / Fax: (04) 793359/793365 Email: adminhre@reclon.org			DRAWING NUMBER 728/E/B1 SHEET.....1.....of.....1.....		
PROJECT Proposed IPEC Office In Harare For Insurance & Pensions commission			DESCRIPTION Electrical Services Sub Distribution Board SDBB1 Distribution Board Schedule		
Location Basement Floor			Fed From MDB		Feeder Cable Size 6.0mm² x 4 core PVC/SWA/PVC
Isolator 60Amp TP+N			Number of Ways 9 Way SP		Isc 6kA
Circ No	Phase	Description	Mcb	Cable Size	Comments
1	R	Lighting	10A	1.5mm ² Single Core	
	V	Lighting	10A	1.5mm ² Single Core	
	R	Lighting	10A	1.5mm ² Single Core	
2	R	Lighting	10A	1.5mm ² Single Core	
	V	Lighting	10A	1.5mm ² Single Core	
	R	Lighting	10A	1.5mm ² Single Core	
3	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Spare			
	R	Spare			

**BIDDING DOCUMENT FOR PROPOSED PHASE TWO REFURBISHMENT OF IPEC OFFICE AT NO.90
SPEKE AVENUE, HARARE CBD**

PROCUREMENT REFERENCE NO:

PART VI APPENDICES

RECLON CONSULTANTS 33 Bayswater Road Highlands P.O. Box BE 744 Harare Tel / Fax: (04) 793359/793365 Email: adminhre@reclon.org			DRAWING NUMBER 728/E/11 SHEET.....1.....of.....1.....		
PROJECT Proposed IPEC Office In Harare For Insurance & Pensions commission			DESCRIPTION Electrical Services Sub Distribution Board SDB11 Distribution Board Schedule		
Location First Floor			Fed From MDB	Feeder Cable Size 16.0mm² x 4 core PVC/SWA/PVC	
Isolator 60Amp TP+N			Number of Ways 54 Way SP	Isc 6kA	
Circ No	Phase	Description	Mcb	Cable Size	Comments
1	R	Lighting	10A	1.5mm ² Single Core	
	V	Lighting	10A	1.5mm ² Single Core	
	R	Lighting	10A	1.5mm ² Single Core	
2	R	Lighting	10A	1.5mm ² Single Core	
	V	Lighting	10A	1.5mm ² Single Core	
	R	Lighting	10A	1.5mm ² Single Core	
3	R	Lighting	10A	1.5mm ² Single Core	
	V	Lighting	10A	1.5mm ² Single Core	
	R	Lighting	10A	1.5mm ² Single Core	
4	R	Lighting	10A	1.5mm ² Single Core	
	V	Lighting	10A	1.5mm ² Single Core	
	R	Lighting	10A	1.5mm ² Single Core	
5	R	Lighting	10A	1.5mm ² Single Core	
	V	Lighting	10A	1.5mm ² Single Core	
	R	Lighting	10A	1.5mm ² Single Core	

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6	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
7	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
8	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
9	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main

RECLON CONSULTANTS 33 Bayswater Road Highlands P.O. Box BE 744 Harare Tel / Fax: (04) 793359/793365 Email: adminhre@reclon.org			DRAWING NUMBER 728/E/11 SHEET.....1.....of.....1.....		
PROJECT Proposed IPEC Office In Harare For Insurance & Pensions commission			DESCRIPTION Electrical Services Sub Distribution Board SDB11 Distribution Board Schedule		
Location First Floor			Fed From MDB	Feeder Cable Size 16.0mm² x 4 core PVC/SWA/PVC	
Isolator 60Amp TP+N			Number of Ways 54 Way SP	Isc 6kA	
Circ No	Phase	Description	Mcb	Cable Size	Comments
10	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main

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	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
11	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
12	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
13	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
14	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Spare			
15	R	Spare			
	V	Spare			
	R	Spare			
16	R	Spare			
	V	Spare			
	R	Spare			
17	R	Spare			
	V	Spare			
	R	Spare			
18	R	Spare			
	V	Spare			
	R	Spare			

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RECLON CONSULTANTS 33 Bayswater Road Highlands P.O. Box BE 744 Harare Tel / Fax: (04) 793359/793365 Email: adminhre@reclon.org			DRAWING NUMBER 728/E/UPS11 SHEET.....1.....of.....1.....		
PROJECT Proposed IPEC Office In Harare For Insurance & Pensions commission			DESCRIPTION Electrical Services Sub Distribution Board UPS11 Distribution Board Schedule		
Location First Floor			Fed From 20kVA UPS	Feeder Cable Size 6.0mm² x 4 core PVC/SWA/PVC	
Isolator 32Amp TP+N			Number of Ways 24 Way SP	Isc 6kA	
Circ No	Phase	Description	Mcb	Cable Size	Comments
1	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
2	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
3	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
4	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
5	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main

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	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
6	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
7	R	Spare			
	V	Spare			
	R	Spare			
8	R	Spare			
	V	Spare			
	R	Spare			

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SPEKE AVENUE, HARARE CBD**

PROCUREMENT REFERENCE NO:

PART VI APPENDICES

RECLON CONSULTANTS 33 Bayswater Road Highlands P.O. Box BE 744 Harare Tel / Fax: (04) 793359/793365 Email: adminhre@reclon.org			DRAWING NUMBER 728/E/31 SHEET.....1.....of.....1.....		
PROJECT Proposed IPEC Office In Harare For Insurance & Pensions commission			DESCRIPTION Electrical Services Sub Distribution Board SDB31 Distribution Board Schedule		
Location Third Floor			Fed From MDB	Feeder Cable Size 16.0mm² x 4 core PVC/SWA/PVC	
Isolator 60Amp TP+N			Number of Ways 35 Way SP	Isc 6kA	
Circ No	Phase	Description	Mcb	Cable Size	Comments
1	R	Lighting	10A	1.5mm ² Single Core	
	V	Lighting	10A	1.5mm ² Single Core	
	R	Lighting	10A	1.5mm ² Single Core	
2	R	Lighting	10A	1.5mm ² Single Core	
	V	Lighting	10A	1.5mm ² Single Core	
	R	Lighting	10A	1.5mm ² Single Core	
3	R	Lighting	10A	1.5mm ² Single Core	
	V	Lighting	10A	1.5mm ² Single Core	
	R	Lighting	10A	1.5mm ² Single Core	
4	R	Lighting	10A	1.5mm ² Single Core	
	V	Lighting	10A	1.5mm ² Single Core	
	R	Lighting	10A	1.5mm ² Single Core	
5	R	Lighting	10A	1.5mm ² Single Core	
	V	Lighting	10A	1.5mm ² Single Core	

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SPEKE AVENUE, HARARE CBD**

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	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
6	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
7	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
8	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
9	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main

RECLON CONSULTANTS 33 Bayswater Road Highlands P.O. Box BE 744 Harare Tel / Fax: (04) 793359/793365 Email: adminhre@reclon.org			DRAWING NUMBER 728/E/31 SHEET.....1.....of.....1.....		
PROJECT Proposed IPEC Office In Harare For Insurance & Pensions commission			DESCRIPTION Electrical Services Sub Distribution Board SDB31 Distribution Board Schedule		
Location Third Floor			Fed From MDB	Feeder Cable Size 16.0mm² x 4 core PVC/SWA/PVC	
Isolator 60Amp TP+N			Number of Ways 35 Way SP	Isc 6kA	
Circ No	Phase	Description	Mcb	Cable Size	Comments

**BIDDING DOCUMENT FOR PROPOSED PHASE TWO REFURBISHMENT OF IPEC OFFICE AT NO.90
SPEKE AVENUE, HARARE CBD**

PROCUREMENT REFERENCE NO:

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10	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
11	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
12	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Spare			
	R	Spare			
13	R	Spare			
	V	Spare			
	R	Spare			
14	R	Spare			
	V	Spare			
	R	Spare			
15	R	Spare			
	V	Spare			
	R	Spare			

**BIDDING DOCUMENT FOR PROPOSED PHASE TWO REFURBISHMENT OF IPEC OFFICE AT NO.90
SPEKE AVENUE, HARARE CBD**

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RECLON CONSULTANTS 33 Bayswater Road Highlands P.O. Box BE 744 Harare Tel / Fax: (04) 793359/793365 Email: adminhre@reclon.org			DRAWING NUMBER 728/E/UPS31 SHEET.....1.....of.....1.....		
PROJECT Proposed IPEC Office In Harare For Insurance & Pensions commission			DESCRIPTION Electrical Services Sub Distribution Board UPS31 Distribution Board Schedule		
Location Third Floor			Fed From 20kVA UPS	Feeder Cable Size 6.0mm² x 4 core PVC/SWA/PVC	
Isolator 32Amp TP+N			Number of Ways 21 Way SP	Isc 6kA	
Circ No	Phase	Description	Mcb	Cable Size	Comments
1	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
2	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
3	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
4	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
5	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
	V	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main

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	R	Switched Socket Outlet	30A	2.5mm ² Single Core	Ring Main
6	R	Spare			
	V	Spare			
	R	Spare			
7	R	Spare			
	V	Spare			
	R	Spare			

RECLON CONSULTANTS 33 Bayswater Road Highlands P.O. Box BE 744 Harare Tel / Fax: (04) 793359/793365 Email: adminhre@reclon.org			DRAWING NUMBER 728/E/DB1- Aircon SHEET.....1.....of.....1.....		
PROJECT Proposed IPEC Office In Harare For Insurance & Pensions commission			DESCRIPTION Electrical Services Sub Distribution Board DB1 Aircon Distribution Board Schedule		
Location Third floor Roof Slab			Fed From MDB	Feeder Cable Size 35.0mm² x 4 Core PVC/SWA/PVC	
Isolator 125Amp TP+N			Number of Ways 24 Way SP	Isc 6kA	
Circ No	Phase	Description	Mcb	Cable Size	Comments

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SPEKE AVENUE, HARARE CBD**

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1	R	Single Phase Isolator for	15A	4,0mm ² Single Core	
	Y	Single Phase Isolator for	15A	4,0mm ² Single Core	
	B	Single Phase Isolator for	15A	4,0mm ² Single Core	
2	R	Single Phase Isolator for	15A	4,0mm ² Single Core	
	Y	Single Phase Isolator for	15A	4,0mm ² Single Core	
	B	Single Phase Isolator for	15A	4,0mm ² Single Core	
3	R	Single Phase Isolator for	15A	4,0mm ² Single Core	
	Y	Single Phase Isolator for	15A	4,0mm ² Single Core	
	B	Single Phase Isolator for	15A	4,0mm ² Single Core	
4	R	Single Phase Isolator for	15A	4,0mm ² Single Core	
	Y	Single Phase Isolator for	15A	4,0mm ² Single Core	
	B	Single Phase Isolator for	15A	4,0mm ² Single Core	
5	RYB	Three Phase Isolator for Airconditioning	63A	16.0mm ² 4 Core PVC/SWA/PVC	
6	RYB	Three Phase Isolator for Airconditioning	63A	16.0mm ² 4 Core PVC/SWA/PVC	
7	R	Spare			
	Y	Spare			
	B	Spare			
8	R	Spare			
	Y	Spare			
	B	Spare			
RECLON CONSULTANTS			DRAWING NUMBER		
33 Bayswater Road			728/E/DB2- Aircon		
Highlands					
P.O. Box BE 744			SHEET.....1.....of.....2.....		
Harare					
Tel / Fax: (04) 793359/793365					
Email: adminhre@reclon.org					
PROJECT			DESCRIPTION		
Proposed IPEC Office In Harare For Insurance & Pensions commission			Electrical Services Sub Distribution		
			Board DB2 Aircon		

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			Distribution Board Schedule		
Location			Fed From		Feeder Cable Size
Third floor Roof Slab			MDB		25.0mm² x 4 Core PVC/SWA/PVC
Isolator			Number of Ways		Isc
100Amp TP+N			33 Way SP		6kA
Circ No	Phase	Description	Mcb	Cable Size	Comments
1	R	Single Phase Isolator for	15A	4,0mm ² Single Core	
	Y	Single Phase Isolator for	15A	4,0mm ² Single Core	
	B	Single Phase Isolator for	15A	4,0mm ² Single Core	
2	R	Single Phase Isolator for	15A	4,0mm ² Single Core	
	Y	Single Phase Isolator for	15A	4,0mm ² Single Core	
	B	Single Phase Isolator for	15A	4,0mm ² Single Core	
3	R	Single Phase Isolator for	15A	4,0mm ² Single Core	
	Y	Single Phase Isolator for	15A	4,0mm ² Single Core	
	B	Single Phase Isolator for	15A	4,0mm ² Single Core	
4	R	Single Phase Isolator for	15A	4,0mm ² Single Core	
	Y	Single Phase Isolator for	15A	4,0mm ² Single Core	
	B	Single Phase Isolator for	15A	4,0mm ² Single Core	
5	R	Single Phase Isolator for Airconditioning	15A	4,0mm ² Single Core	
	Y	Single Phase Isolator for Airconditioning	15A	4,0mm ² Single Core	
	B	Single Phase Isolator for Airconditioning	15A	4,0mm ² Single Core	

RECLON CONSULTANTS	DRAWING NUMBER
33 Bayswater Road	728/E/DB2- Aircon
Highlands	

**BIDDING DOCUMENT FOR PROPOSED PHASE TWO REFURBISHMENT OF IPEC OFFICE AT NO.90
SPEKE AVENUE, HARARE CBD**

PROCUREMENT REFERENCE NO:

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P.O. Box BE 744 Harare Tel / Fax: (04) 793359/793365 Email: adminhre@reclon.org			SHEET.....2.....of.....2.....		
PROJECT Proposed IPEC Office In Harare For Insurance & Pensions commission			DESCRIPTION Electrical Services Sub Distribution Board DB2 Aircon Distribution Board Schedule		
Location Third floor Roof Slab			Fed From MDB	Feeder Cable Size 25.0mm² x 4 Core PVC/SWA/PVC	
Isolator 100Amp TP+N			Number of Ways 33 Way SP	Isc 6kA	
Circ No	Phase	Description	Mcb	Cable Size	Comments
6	R	Single Phase Isolator for Airconditioning	15A	4,0mm ² Single Core	
	Y	Single Phase Isolator for Airconditioning	15A	4,0mm ² Single Core	
	B	Single Phase Isolator for Airconditioning	15A	4,0mm ² Single Core	
7	RYB	Three Phase Isolator for Airconditioning	32A	6.0mm ² 4 Core PVC/SWA/PVC	
8	RYB	Three Phase Isolator for Airconditioning	63A	16.0mm ² 4 Core PVC/SWA/PVC	
9	R	Spare			
	Y	Spare			
	B	Spare			
10	R	Spare			
	Y	Spare			
	B	Spare			
11	R	Spare			
	Y	Spare			
	B	Spare			

Declaration by the Accounting Officer

I declare that the procurement is based on neutral and fair technical requirements and bidder qualifications.

**BIDDING DOCUMENT FOR PROPOSED PHASE TWO REFURBISHMENT OF IPEC OFFICE AT
NO.90 SPEKE AVENUE, HARARE CBD**

PROCUREMENT REFERENCE NO:

PART VI APPENDICES

DECLARATION

I declare that the procurement is based on neutral and fair technical requirements and bidder qualifications.

**TAKESURE CHABAYA
PROCUREMENT MANAGER**

**SIBONGILE SIWELA
ACTING COMMISSIONER**