



MINISTRY OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE

3RD ADDENDUM

This addendum is hereby issued to all bidders participating in the tenders listed in the table below:

Tender Number	Description
ZIM/CHNDU/EU/TFP/BORDERLIGHTING EQUIPMENT/05/21	Supply and installation of border lighting equipment.
ZIM/CHNDU/EU/TFP/WEIGH-BRIDGE/02/22	Supply and installation of weigh bridges
ZIM/CHNDU/EU/TFP/AIR CONDITIONERS/10/21	Supply and installation of air conditioning units.
ZIM/CHNDU/EU/TFP/GATES SCREENS SCANNER AND CCTV/02/21	Supply and installation of electronically controlled gates, information screens, baggage scanners and CCTVs.
ZIM/CHNDU/EU/TFP/IT EQUIPMENT/01/22	Supply and delivery of IT equipment
ZIM/CHNDU/EU/TFP/MINI LAB EQUIPMENT/07/21	Supply and delivery of mini laboratory equipment

MINISTRY OF FOREIGN AFFAIRS AND
INTERNATIONAL TRADE
PROCUREMENT MANAGEMENT UNIT

05 MAY 2022

P.O. BOX 4240, HARARE
ZIMBABWE

CLARIFICATIONS ON TENDERS FOR CHIRUNDU UPGRADE PROJECT

ZIM/CHNDU/TFP/BORDER LIGHTING EQUIPMENT/05/21 Supply, delivery and installation of border lighting equipment	QUESTIONS AND RESPONSES TO REQUESTS FOR CLARIFICATIONS
LOT 1: Tower lights	<p>1. Are there technical specification and drawings for the tower lights?</p> <p>Response: Yes, find attached additional technical specifications and drawings for the tower lights, Annexure 1.</p>

LOT 2: Solar power system	<p>1. Are there technical specification and drawings for the solar power plant?</p> <p>Response: Yes, find attached additional technical specifications and drawings for the solar power plant, Annexure 2.</p>
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LOT 3: Bridge lighting	<p>1. Are there technical specification and drawings for the bridge lights?</p> <p>Response: Yes, find attached additional technical specifications and drawings for bridge lighting, Annexure 2.</p>
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ZIM/CHNDU/TFP/AIR CONDITIONING/10/22 Supply, delivery and installation of air conditioning units	QUESTIONS AND RESPONSES TO REQUESTS FOR CLARIFICATIONS
Air Conditioning units	<p>1. Are there drawings for the air conditioning units?</p> <p>Response: Yes, find attached technical drawings for air conditioning units, Annexure 3.</p>

<p>ZIM/CHNDU/TFP/GATES, SCREENS, SCANNERS AND CCTV/02/21</p> <p>Supply, delivery and installation of gates, screens, scanners and CCTVs</p>	<p>QUESTIONS AND RESPONSES TO REQUESTS FOR CLARIFICATIONS</p>
<p>LOT 1: Baggage scanner</p>	<p>1. What is the minimum size of the baggage scanner?</p> <p>Response: Opening tunnel 1000mmX1000mm, conveyor speed 0,20m/s in forward direction, 220 vac, 50 Hz, 1kva, baggage weight 200kg</p> <p>2. Do you require single or double generators (single view or double view?)</p> <p>Response: Double generators dual view</p> <p>3. Do you need entry and exit roller tables?</p> <p>Response: Yes, we need entry and exit roller tables</p> <p>4. What is the length of each roller table?</p> <p>Response: The minimum length for entry roller table must be 1000mm and minimum length for exit roller table must be 1200mm in length sliding</p> <p>5. What is the required height of the conveyor from the floor?</p> <p>Response: The minimum height of the conveyor from the floor must be 300mm</p> <p>6. Is there a bid bond or security required?</p> <p>Response: Yes, a tender guarantee is required as indicated on page 57 of the tender document. Find attached Annexure 5</p>

<p>LOT 2: Electronically controlled gates</p>	<p>1. What are the technical and drawing specifications of the electronically controlled gates?</p> <p>Response: Find attached technical specifications for the electronically controlled gates, Annexure 7.</p>
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LOT 3: Out-door information screens	<p>1. What are the technical specifications of the out-door information screens?</p> <p>Response: Find attached the technical information for the outdoor information screens, Annexure 6</p>
LOT 4: CCTVs	<p>1. What are the technical specifications for the CCTV system?</p> <p>Response: Find attached the technical specifications for the CCTV system, Annexure 4</p>

ZIM/CHNDU/TFP/LAB EQUIPMENT/07/21	QUESTIONS AND RESPONSES TO REQUESTS FOR CLARIFICATIONS
Supply and delivery of mini laboratory equipment	
Mini laboratory equipment	<p>1. Do you want a teaching microscope with 3 heads and one other compound binocular microscope?</p> <p>Response: No. We don't need a teaching microscope. We need a binocular microscope for bacterial examination.</p>

ZIM/CHNDU/EU/TFP/IT EQUIPMENT/02/22	QUESTIONS AND TENDER REFERENCE CLAUSE 1.1 IN TECHNICAL SPECIFICATIONS
Supply and delivery of IT equipment	
Servers (Oracle)	<p>1. Which CPU is needed?</p> <p>Response: 8 CPU modules, each with one Intel® Xeon® Platinum 8268 or 8260 processor Minimum 8 processors Cores: 8x24 Cores</p>
Platinum 8268 or 8260 processor	<p>2. How much memory per CPU, there will be 8 CPUs?</p> <p>Response: 96 DIMM Slots – minimum 5 TB of DDR4 ECC DIMM memory Minimum 8 processors (CPUs) Cores: 8x24 Cores (as stated in point 1)</p> <p>3. How much internal storage?</p>

	<p>Response: Minimum 160TB usable storage in Eight 2.5-inch SAS-3 rear-accessible, hot-swappable drive bays. Minimum of 6 TB usable of NVMe SSDs.</p> <p>All bays can be populated with SAS-3 HDDs or SSDs. One embedded 12 Gb/sec SAS-3 RAID HBA supporting RAID levels 0, 1, 5, 6, 10, 50, and 60 with 2 GB of flash-backed write-back cache.</p>
	<p>4. What network and I/O connectivity is required?</p> <p>Response: At least 4 ports Fibre Channel HBAs Eight 10 GbE onboard Ethernet copper ports Two 1 GbE onboard Ethernet copper ports</p>
Printer	<p>5. What is the printer of the machine that you requested?</p> <p>Response: Minimum of 35 pages per minute</p>
U-CABINET (SIZES 1U-48U)	<p>6. Which particular size do you want?</p> <p>Response: 47 U</p>
Network trunk	<p>7. There are several sizes to choose from, can you kindly give us more details. PoE or Non PoE?</p> <p>Response: 48port PoE</p>
24 or 48 Port Cisco 9200 series switch	
Network patch codes	<p>8. 1m or 3m long?</p> <p>Response: 1m</p>
Wireless access point	<p>9. Which particular brand?</p> <p>Response: CISCO 9100 series with DNA licence for indoor and outdoor (will require controllers for central management)</p>
	<p>10. Is it possible to bid on items instead of the whole lot?</p> <p>Response: Yes</p>
Switches	<p>11. Is it acceptable to quote other models besides CISCO for the switches?</p>

	Response: Direction is standardised CISCO therefore substitutes are NOT acceptable
Wire access points	<p>12. The type and are access points going to be connected to a controller?</p> <p>Response: CISCO 9100 series with DNA licence</p> <p>Response: CISCO 9800 series Wireless LAN controller</p>
Network trunk for housing network cables	<p>13. What is the sizes e.g 16X25 trunking, 25x40 trunking?</p> <p>Response: Size depends on the amount of cables</p>

LIST OF ANNEXURES

<u>ANNEXURE</u>	<u>DESCRIPTION</u>
1	Tower lights
2	Solar plant
3	Designs for air conditioning units
4	Technical specifications for CCTVs
5	Tender guarantee form
6	Technical specifications for outdoor information screens
7	Technical specifications for electronically controlled gates

ANNEXURE 1

CONTRACT FOR SUPPLY, DELIVERY AND INSTALLATION OF BORDER LIGHTING EQUIPMENT.

**PROCUREMENT REF: ZIM/CHNDU/EU/TFP/BORDER LIGHTING
EQUIPMENT/05/21**

THE GOVERNMENT OF ZIMBABWE

MINISTRY OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE.

SPECIFICATION AND BILLS OF QUANTITIES FOR THE

AREA LIGHTING RETICULATION AND

COMMISSIONING

AT

CHIRUNDU ONE STOP BORDER POST,

COMESA TRADE FACILITATION PROJECT

IN

CHIRUNDU, ZIMBABWE

Ministry of Foreign Affairs and International Trade
Munhumutapa Building
PO Box CY4240
Causeway
Harare.

Contractor

Physical address.....

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Tender Closing Tender Date

ELECTRICAL INSTALLATION

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SECTION 1

THE GOVERNMENT OF ZIMBABWE MINISTRY OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE.

FORM OF TENDER

**Ministry of Foreign Affairs and International Trade.
P O Box CY4240
Causeway
HARARE.**

TENDER No..... CLOSING DATE.....

I/We having read the conditions and procedures of Tender overleaf and having also read and carefully considered the relevant drawings, specifications, Bills of Quantities, Articles of agreement and Conditions of contract do here by offer to provide everything necessary for the proper execution and completion, all in accordance with the said documents and to the reasonable satisfaction of the Secretary for Ministry of Foreign Affairs and International Trade at Munhumutapa Building.

.....
For the sum of

In words

.....(in block letters)

I/We undertake to complete the works included in the Tender Documents in accordance withinMONTHS and agree that liquidated and ascertained damages for non-completion shall be 0.05% of the contract sum per week.

Assignment or Sub-letting

I/We propose subletting the trades listed below to the companies registered by the **Ministry of Foreign Affairs and International Trade** listed against the trade:

TRADE

SUB-CONTRACTOR

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

I/We confirm that the above sub-contracts constitute.....percent of the contract value.

I/We agree that after the contract has been accepted no variation in the approved subcontractors will be permitted without prior consent of The Secretary for Foreign Affairs and International Trade.

Name of Tenderer in:

Block letters or Rubber stamp.....

Address of

Tenderer.....

...

Signature of

Tenderer.....Date.....

The following must be completed by the proposed suretor.

In the event of this tender being accepted I/We undertake to provide a Surety Bond.

Signature of

Suretor:.....Date.....

Company

Stamp.....

...

NOTE ON FLUCTUATIONS:

The tenderer is advised that claims for fluctuations in the costs of materials and labour are to be submitted not more than three months after the costs are incurred. Any claims for costs submitted more than three months after they are incurred will render the claims invalid and unacceptable. The tenderer must submit basic price list from established manufacturers with the tender. Failure to do so, the rates priced in the Bills of Quantities will be taken to be fixed.

SECTION 2

MANDATORY CONDITIONS OF TENDER

- 1) No qualification shall be in contravention of the Terms of References stated in the Instruction to Tenderers, specification and Notice to Tenderers.
- 2) Only tenderers in the category specified on advert will be considered.
- 3) Tenderers must ensure that they are registered with The Ministry of Foreign Affairs and International Trade.
- 4) Offers must hold good for 90 days from the closing date and tenderer must confirm this in writing.
- 5) Tenders must attach a valid tax clearance certificate to the bid.
- 6) Bids should be submitted with a basic price list for labour, plant and materials together with pro-forma invoices from reputable suppliers.
- 7) Not less than three copies of all tender documents shall be submitted by the Tenderer and Original shall be clearly marked.
- 8) Tenderers should submit a bank statement of not less than twelve (12) months and proof for any lines of credit.
- 9) Tenderers **must** complete the form of tender attached.
- 10) All tenderers are required to attend the compulsory site visit and attach site visit certificate to the tender documents. (Unless tenderers have been notified in writing or on advert that there will not be need for site visit)

NOTICE TO TENDERERS

1. Compulsory tender site visit:

There shall be a compulsory site visit to familiarise tenderers with the project they are tendering for. The compulsory site visit will be on

.....at

2. Return of documents:

- a) The bidder shall return the full set of documents, and only those documents issued out by the client in the invitation to tender. Each document shall be marked with bidder's stamp; this includes every drawing issued with the invitation to tender.
- b) The said documents shall be comprised of the following:
 - 1. Form of tender
 - 2. Specifications/Bills of Quantities
 - 3. Drawings
 - 4. Engineer or supervising officer's response to queries.

3. Scope of works:

The works comprises electrical engineering installations, reticulation and commissioning ofas per attached drawings and specifications.

4. Drawings:.....

As per drawings list attached.

5. Description of site:

The site of the proposed works is located in/at.....Contractor to contact the architect/engineer for the specific location of the site.

6. Examination of Site

The contractor is required to visit the site and examine the site prior to submitting his priced document and acquaint himself with the local conditions, access, the extent and nature of the operations, supply of and conditions affecting labour and execution of the works in general.

7. Confinement of building operations:

The contractor shall not, in the execution of the works enter upon or otherwise make use of any adjoining the site of the works without the consent of the Architect/Engineer or without the consent of the owner of such adjoining

lands having been previously obtained, but shall (except with such consent) confine his operations within the site of the works. No trespassing beyond the limits as above described will be allowed.

8. Bills of Quantities:

These bills of quantities/Specifications contain pages numbered 1 – 29 as indexed with annexes by **THE MINISTRY OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE**. The contractor is required to check the number of pages and should any be found to be missing or in duplicate or figures or letters in distinct or contain obvious errors, doubtful, or ambiguous descriptions, the contractor must inform the architect/engineer, quantity surveyor at once and have the same rectified in writing. No liability whatsoever will be admitted in respect of errors in the document due to the foregoing. *Please note that the abbreviation R.O shall mean “Rate only”.*

The bill of quantities shall not be used for ordering materials. Rejection of materials ordered contrary to this provision shall be the contractor sole liability.

9. Pricing bills of Quantities:

The individual rates in the Bill of Quantities are to be exclusive of value added tax (V.A.T.). V.A.T. should however be added in the space provided in the final summary page of this document. Prices and quotations obtained from suppliers /subcontractors for pricing purposes should however include VAT. If the contractor is in any doubt, he should consult the Architect/Engineer.

The contractor must be a registered operator in terms of Value Added Tax Act and must produce proof of registration.

All items in the Bills of Quantities shall be priced and extended in black ink. All pages are to separately cast and the separate casts carried to the collection page provided at the end of each bill.

Should the contractor not price any particular item, he is to write hyphens thus -----in the money column opposite such item. Failure by contractor to price such item will in no way exonerate him from his responsibilities under such item.

No alteration should be made by the contractor in the text of the bill of quantities. If Any alterations or additions is made by him such an alterations or additions will not be recognised and the text of the bill of quantities will be rigidly adhered to.

No representation, explanation or statement which in any way alters the pricing document or contract documents made prior to the acceptance of the price or during the progress of the contract shall bind the employer unless such explanation, statement or alteration be made and confirmed in writing by the architect.

10. Submission of tenders

The priced document must be returned to the offices of

.....

on.....

The priced bill of quantities/specification, incorporating the following pages, duly completed are to be submitted in plain envelope:

Form of tender

Labour rates (Current NEC rates.)

Plant and material applicable to authorised day works.

Labour price list

Material price list

Schedule of site personal

Proposed construction programme Proposed
schedule of subcontractors.

Proposed cash flow charts

Schedule of exchange rates at the time of pricing.

Tax clearance certificate VAT registration
certificate.

NSSA Certificate

SHEQ

11. Time of Completion:

The work shall be completed within a period of.....() months.

12. Contract Conditions:

The Tenderers will be required to read and understand fully the **Articles of Agreement and Conditions of Contract 1985, Specifications, Bills of Quantities, Preliminaries and General Bill**. All work will be executed in accordance with the said documents and to the reasonable satisfaction of the employers supervising team.

13. Early ordering of Materials:

As the time of completion of this contract is of the utmost important and also every endeavour is to be made to avoid cost escalations, the contractor will be required to immediately order all possible materials for the contract on the signing and acceptance of the contract.

14. Drawings:

The schedules of drawings used to prepare these bills of quantities are;.....
Engineering Drawings by **The Ministry of Foreign Affairs and International Trade, Harare.**

15 Evaluation Criteria:

The lowest evaluated tender or most economically advantageous to specification shall be accepted. However the following will also be analysed to determine the award of contract: Reputation, Arithmetical Checks, General trend of pricing and Financial Capability.

16 Confidentiality:

All information relating to examination, clarification, evaluation and comparison of tenders and recommendations shall not be disclosed to tenderers or any other person not officially concerned with such process until the award of contract is announced. No tenderer shall contact the employer on any matter relating to his or her tender. Any tenderer in possession of confidential information will face disqualification.

17 Queries:

Should the Tenderer have any queries regarding the interpretation of the Tender drawings and document, they shall list on the sheet provided below and shall be made to the Architect /Engineer.

Queries raised by the contractor shall be addressed to:

To: The Secretary

Ministry of Foreign Affairs and International Trade

P. O Box CY4240

Causeway

Harare.

The Queries' Sheet

Query	Answer

.....
Signed

.....
Date

SECTION 3

SCOPE OF WORK

The electrical contract comprises the electrical engineering installations, reticulation and commissioning at Chirundu One Stop Border Post in Chirundu.

This electrical installation is to be carried out in accordance with the current S.A.Z regulations and the current edition of the I.E.E wiring regulations and the latest edition of the Government of Zimbabwe Standard Electrical Specification for the Government Electrical Installation.

The Electrical Contractor shall execute the contract works as detailed in this specification and on the drawings including:-

1. Electrical Engineering Works.
2. Distribution board(s) including switch gear and Testing.
3. External Reticulation.
4. Supply cables including cable support system.
5. Earthing system.

The Electrical Contractor shall include for the supply, delivery to site, off loading, hoisting, erection and commissioning of all materials as detailed in the specification and on the drawings.

SECTION 4

DEFINITIONS

The following definitions of terms shall apply throughout this specification and to tender and contractual documents.

- 4.1 The CLIENT or EMPLOYER shall mean the Foreign Affairs and International Trade.
- 4.2 The ARCHITECT shall mean Secretary of The Foreign Affairs and International Trade and their duly authorised representatives.
- 4.3 The ENGINEER shall mean the Secretary of The Foreign Affairs and International Trade and their duly authorised representatives.
- 4.4 The MAIN CONTRACTOR shall mean the firm appointed to carry out the main building or contract works.
- 4.5 The SUB-CONTRACTOR shall mean the firm appointed to carry out the works which are the subject of this specification.
- 4.6 The works shall mean the supply, delivery, off-loading, handling and installation of all materials and equipment as described in this specification and the drawings which accompany it to complete and commissioning the electrical installation to the entire satisfaction of the Client, the Architect and the Engineer.

SECTION 5

CONDITIONS OF CONTRACT

5.1 GENERAL

The contractor shall be a Nominated contractor and shall be governed by The Foreign Affairs and International Trade Standard Conditions of Contract where applicable.

A copy of these conditions and terms is available for inspection at the offices of The Foreign Affairs and International Trade and Tenderers shall acquaint themselves fully with such terms and conditions, and shall include in their tendered price for any cost involved in fulfilling such requirements in so far as they are applicable in this section of the works.

The contract shall include the supply, delivery, erection, fixing, connecting and testing of all materials necessary for the completion of the works described in the specification and/or Standard Electrical Specification and/or the C.A.S. No. C.C.I: 1964 as amended and/or shown on the drawings attached to the contract.

5.2. DRAWINGS

The drawings issued and forming part of this contract are detailed in Section 7. These drawings are provided as guide to the Government's requirements and the scale and accuracy is not guaranteed. The Electrician shall be responsible for correcting any discrepancies, errors or omissions in the drawings and other particulars supplied with this specification.

5.3 PROGRAM TO BE FURNISHED

Within 14 (fourteen) days of receipt of the Main Contractor's program, the Sub-Contractor shall submit to the Engineer, through the Main Contractor, a practicable work schedule in reproducible form, based on the Main Contractor's schedule.

The schedule shall include as a minimum, a comprehensive bar-chart or other approved diagrammatic means of recording both the planned program and the actual performance of the Contractor's work, and the same shall be in order that the progress of all activities within the Contract may be clearly assessed in relation to the planned program.

5.4 EXECUTION OF WORKS

The Electrician shall execute the Contract Works and such variation thereof as may be ordered in accordance with this contract in all respects.

5.5 MATERIALS AND WORKMANSHIP

- (a) The Engineer and or Electrical Inspector shall have the power at any time to inspect and examine any part of the works or any material intended for use in the works. The Electrician shall give all such facilities as the Engineer and or Electrical Inspector may require to be given for such inspection and examination.
- (b) The works shall be executed using only the best workmanship in a workmanlike manner and to the satisfaction of the Engineer and/or Electrical Inspector.

If any materials or workmanship are not in accordance with the provision of the contract to the satisfaction of the Engineer and or Electrical Inspector the same shall, at the cost of the Electrician, be replaced rectified or reconstructed as the case may be and all rejected material removed from the site.

5.6 PLANT, OFF LOADING AND ERECTION

The Electrician shall, at his own expense provide all materials, labour, tools and apparatus necessary to execute and complete the works to the satisfaction of The Secretary and shall be fully responsible for the loading and erection of his plant and materials on site.

5.7 VARIATION TO THE WORKS

The Electrician shall be solely responsible for allowing in his tendered price for the correct quantities of all materials from measurements taken by him on site, and no variations will be approved unless the works are modified, except for underground cable installations.

5.8 COMPLETION OF WORKS

The works shall not be considered complete according to the contract, until they have been certified by the Engineer to have been completed and tested to his satisfaction.

5.9. MAINTENANCE PERIOD

The maintenance period shall be twelve months after the installation has been taken over, during which time the Electrician shall make good, when called upon to do so, any defect which may develop under proper use and arising from faulty materials, design or workmanship relative to this specification.

5.10 TENDERED PRICE

The tendered price shall be net and shall include:-

- (a) All costs and charges that may be necessary to comply with all relevant terms of this specification. Special attention is called to the advisability of insurance against fire, accidents to workmen, and third parties.
- (b) All customs and import duties.
- (c) All other items either necessary or specified.

5.11 FLUCTUATION IN PRICE OF MATERIALS

Shall be in accordance with section 1.20 Standard Electrical Specification.

5.12. SUB-LETTING OF CONTRACT

The successful Tenderer shall not assign or further sub-let any portion of the contract without the written permission of The Foreign Affairs and International Trade. The permission shall not be unreasonably withheld and shall not in any way be construed as releasing the successful Tenderer from his obligations and liabilities under the contract.

This clause shall be deemed to apply to all local manufacturers that may be undertaken under the contract.

The right is reserved to terminate the contract if the provision of this clause is ignored.

5.13. ROYALTIES FOR PATENTED DESIGNS

The successful tenderer shall fully indemnify the Government against any action, claim or demand, cost or expenses arising from or incurred by reason of any infringement of letters, patent, design, trade mark, name copyright or other protected rights in respect of any item of equipment, materials or thing system of usage, fixing, operation or arrangements of equipment supplied under the contract.

All payments and royalties payable in one sum or otherwise by instalments, shall be included in the prices stated in the tender and shall be payable by the successful tenderer to those to whom they may be due and payable.

5.14 STANDARD ELECTRICAL SPECIFICATION

The Foreign Affairs and International Trade Standard Electrical Specification, latest edition, shall apply to the whole of the contract whether or not any specific sections are referred to above.

A copy of this specification may be obtained from the Foreign Affairs and International Trade Head Office, Harare.

The submission of a tender shall be accepted as proof that he was in possession of a copy of the above Standard Electrical Specifications at the time of

submitting his tender and that his tendered price was based upon the requirements of that document.

5.15 REDUNDANT MATERIALS

Shall be delivered to The Ministry of Local Government and Public Works Yard, Chirundu and a signature of receipt shall be obtained from the Electrical Inspector.

5.16 "AS INSTALLED" RECORD DRAWINGS

The Contractor shall furnish the Engineer with a complete signed transparent plastic set of "As Installed" record drawings and service manuals covering the complete works.

The drawings shall be in sufficient details to enable the Employer to carry out property maintenance and to be submitted three weeks prior to the commencement of the commission period.

5.17. GUARANTEE

The successful tenderer will be required to guarantee the equipment supplied for a period of not less than 12 months from the date of commissioning on site. This guarantee will be deemed to cover faulty design, workmanship, materials and the suitability of materials supplied for the duties intended.

5.18 TERMS OF PAYMENT

Payment will be made as stated hereunder: -

- (i) 80 % of the value of equipment on delivery to site.
- (ii) 90 % of the value of equipment on installation on site in a sound and acceptable condition.
- (iii) The balance of the Contract Price will be paid six months after the date of acceptance of the equipment, subject to satisfactory operation of the equipment.

SECTION 6

GENERAL REQUIREMENTS FOR MATERIALS AND INSTALLATION

This Schedule and Supplementary Specifications shall be read in conjunction with the Standard Electrical Specification, Third Edition and the C.A.S. Wiring Rules, C.C.I: 1964. The Contractor's submission of a tender based on this Supplementary Specifications shall be accepted as proof that he was in possession of a copy of the

above Standard Electrical Specifications at the time of submitting his tender and that his tendered price was based upon the requirements of that document.

6.1 GENERAL

This specification covers the electrical installation and reticulation as follows:

6.2 CONDUITS AND ACCESSORIES

Shall be installed flush in accordance with Section 5 S.E.S

6.3. LIGHTING SWITCHES: Shall be M.K., G.E.C., AIDCO and or similar approved with white insulated cover plates, for flush units and steel cover plates for surface units. Weatherproof switches shall be G.E.C. or similar approved.

6.4. LAMPS: Shall be 220 Volts to S.A.B.S. 56 or similar approved standard and in fluorescent fittings shall be cod white tubes supplied by the manufacturer of the fittings.

Isolators shall be MK, Heinemann or similar and approved type. All miniature circuit breakers (MCBs) shall be Heinemann, or similar- to be approved.

6.5. SOCKET OUTLETS

Shall be Standard 1 gang 13A, 3 pin MK, 2 gang 13A 3 pin or similar approved standard.

6.6. PLUGTOPS to C.A.S. 22.

6.7. DISTRIBUTION BOARDS

Shall be in accordance with section 3 of S.E.S. mounted at heights to be indicated on site. The spare space specified includes the 25% requirements of the S.E.S.

6.8. STANDARD ELECTRICAL SPECIFICATION

The Ministry of Local Government and Public Works Standard Electrical Specification, latest edition, shall apply to the whole of the contract whether or not any specific sections are referred to above.

6.9 SIMILAR APPROVALS:

If similar items are shown other than those specified in this document, the items concerned must be approved by the Project Engineer or the Deputy Director Electrical Engineering Services of The Ministry before installations on site.

If approval is not sought the contractor shall remove all such items from site at his own cost.

6.10. WATER HEATER POINTS

The water-heaters shall be supplied and installed by others. The points shall be tubed and wired as detailed elsewhere in this specification and as follows: -

For single phase circuits as SK 5233/WH or similar approved isolator shall be mounted adjacent to the water heater, positioned 300mm below ceiling level. The Electrician shall include for the connection of the circuits to The Foreign Affairs and International Trade requirements.

6.11. LIGHTING INSTALLATION

GENERAL

From the various distribution boards wiring of the type specified shall be the same to the various lighting points and switches as detailed on the drawings. Circuiting arrangements are shown on the drawings and shall be adhered to. In addition a separate stranded bare copper earth conductor shall be provided for each lighting circuit.

The various ceiling trunking systems shall be used for circuit wiring where detailed.

6.11.1 LIGHTING SWITCHES

Shall be 5/10 amp wall switches to CAS 147 or similar approved standard with white insulated cover plates, except weatherproof switches.

6.11.2 LAMPS

Shall be 220 V to SABS 56 or similar approved standard and in fluorescent fittings shall be cool white tubes supplied by the manufacture of the fittings.

6.11.3 LIGHTING FITTINGS

NB. LUMIANCE Catalogue was used.

Shall be as per specification of approved type and installed as per the SES.

Type A – 2000 Watts light fitting, LED light fitting equivalent or similar to be approved.

Type B – 120 Watts light fittings, LED light fitting equivalent or similar to be approved

6.12 SITE INSPECTION

Tenderers will be obliged to visit the site before tendering and are supposed to have satisfied themselves as to the local conditions, the accessibility of the site,

the full extent and nature of the works, the supply and conditions affecting labour, transport, unloading, storage and safe custody of materials, workshop accommodation, scaffolding, tackles and tools necessary for the proper execution of the works. Claims on the grounds of lack of knowledge in such respects or otherwise will not be entertained.

6.13. VARIATIONS

Variations to the electrical section of any contract becoming necessary during the progress of the work will be authorised in writing by The Secretary for The Foreign Affairs and International Trade after reasonable and acceptable quotations for the variations have been submitted to the Secretary in writing by the contractor before such variations are carried out by the contractors, otherwise no future payments shall be processed.

Only quotations with detailed breakdown costs will be considered by The Secretary for Foreign Affairs and International Trade. As indicated elsewhere in the tender documents tenderers must submit a basic price list for materials and accessories.

6.14. DUCTS

It will be the responsibility of the Electrical Contractor to see that all ducts have been correctly placed in accordance with the drawings. He shall also ensure that ducts for telephone entries have been correctly placed and make his requirements known to the Main Contractor should he require any sleeves or ducts in the structure.

6.15. EARTHING

An earth point shall be provided at such building and earthing shall be provided in accordance with Section 11 of the Standard Electrical Specification.

6.16 STRUCTURAL LIGHTNING PROTECTION

Material to be used as finals and down conductors shall be galvanised steel of minimum cross sectional area 70 sq. mm (solid and multi stranded).

The minimum cross sectional area for the earth electrode shall be 80 sq. mm and shall be made of copper and or galvanised steel.

Trench earth depth should be at least one metre and shall be 0.5m from the perimeter of the building.

6.17. SUPPLY CONNECTION

Supply connection will be by underground cables.

6.18 SCHEDULE OF ALTERNATIVES OFFERED

Should the Tenderer want to propose alternatives for particular items he should give full details hereunder including price adjustments. This is in addition to submitting a tender document as specified. If no alternatives are proposed, the Tenderer shall write “NIL”

ITEM	REASON	PRICE FLUCTUATION	
		POSITIVE \$	NEGATIVE \$

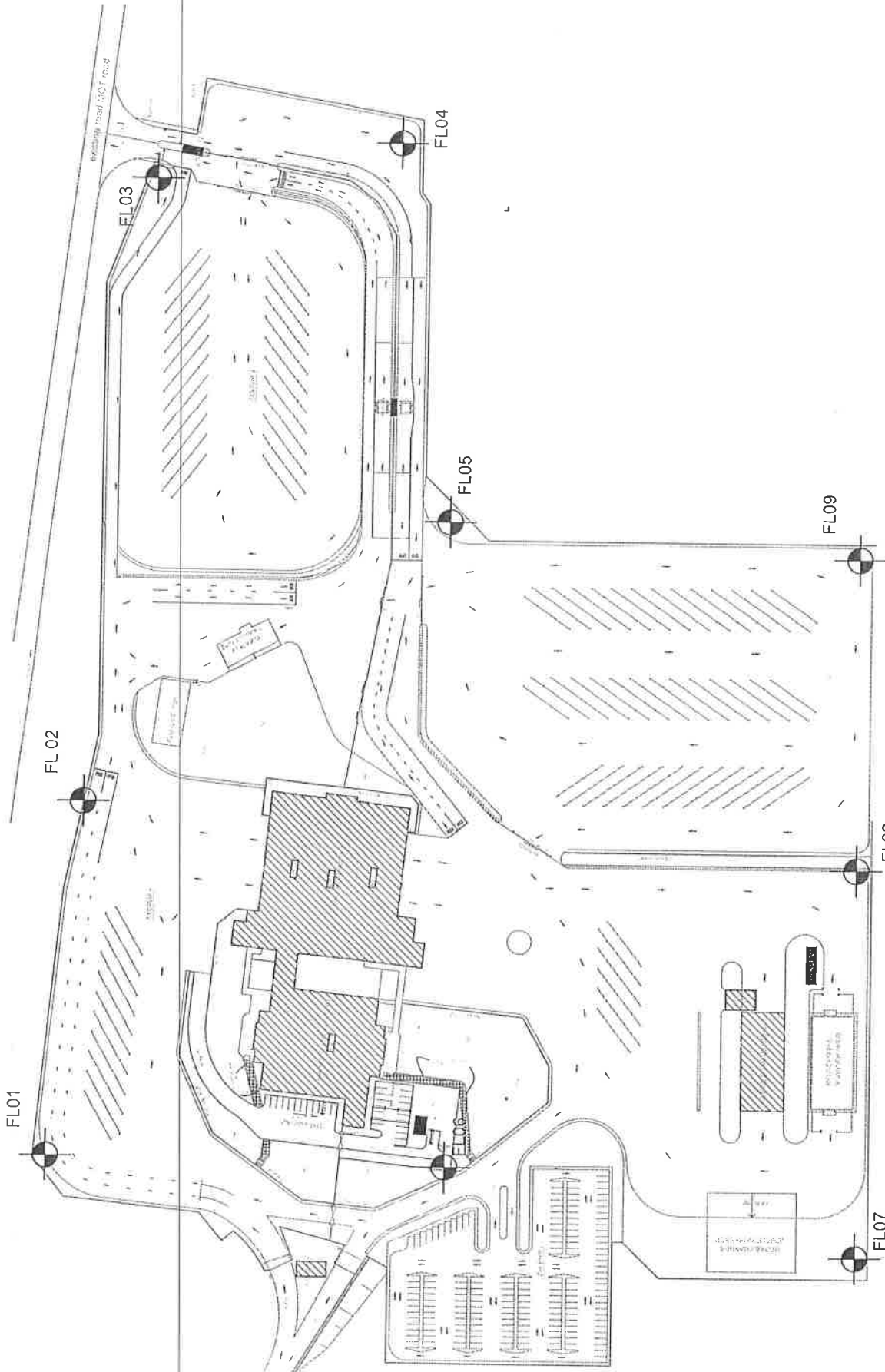
Signature.....Date.....

SECTION 7

SCHEDULE OF DRAWINGS

The Engineer's Drawing[s] covering the Electrical Contract works and which must be read in conjunction with the Specifications are as follows:-

<u>Drawings No.</u>	<u>Description</u>
L / E / 01	Lighting layout.
L / E / 04	DB Schematics.



FLOODLIGHTS LAYOUT

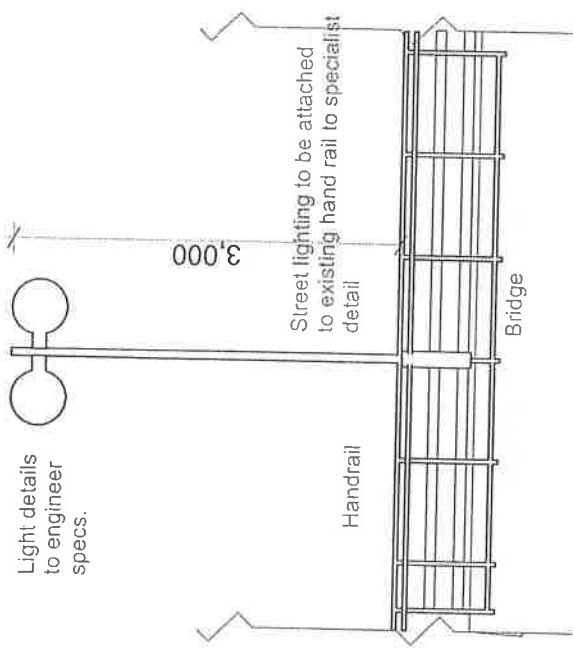
MINISTRY OF
LOCAL GOVERNMENT AND
PUBLIC WORKS
P.O. BOX CY441, CAUSEWAY
ZIMBABWE



Branch Head : G. Gwethuwa	Director Arch. Arch. P.S. Mubira	Ministry : MINISTRY OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE	Consent : CHIRUNDU
Designed : M. Dube	Scale : As Shown	Title : CHIRUNDU BORDER POST COMESA TRADE FACILITATION	
Drawn : M. Dube	Date : August 2021	Description : FLOODLIGHTS LAYOUT	
Checked : LT Mugwira	File Ref :	Details : FLOODLIGHTS LAYOUT	
Telephone 790137 / 704079		Stock Draw No	Project No

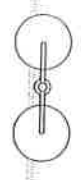
DATE	DATE	DATE
10/08/21	10/08/21	10/08/21

Notes



BRIDGE STREET ELEVATION

1,450



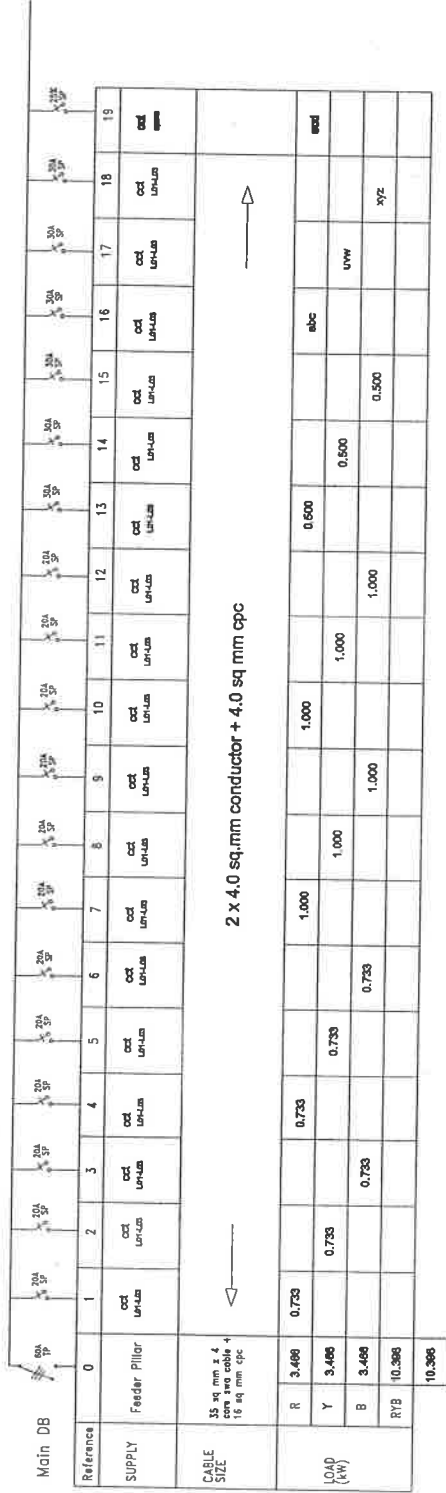
Street lighting to be attached to existing hand rail to specialist detail

BRIDGE STREET LIGHT PLAN

NOTES:	AMENDMENTS		<p>MINISTRY OF LOCAL GOVERNMENT AND PUBLIC WORKS P.O. BOX CY441, CAUSEWAY ZIMBABWE</p>	Branch Head : G. Gwenzhure	Director Arch. P.S. Mutura	Ministry : MINISTRY OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE	Centre : CHIRUNGU	
	LIV	DATE		DESIGNED : M. Dube	Scale : As Shown	Title : CHIRUNGU BORDER POST COMESA TRADE FACILITATION		
				DRAWN : M. Dube	Date : August 2021	Description : BRIDGE STREET LIGHTING		
				CHECKED : L.T. Mugara	File Ref	Details :		
				TELEPHONE 780 137 / 704079		Block Drawing No	G.P. No	Project No

Chirundu Electrical Engineering Works (Old Bridge Lighting)

380V/220V 50Hz



NOTES

ELECTRICAL LEGEND

10 A 1 Gang 1 Way Switch.
Photo sensor, (18 Amp electronic)
2000 Watts light fitting/LED equivalent.
13A Amp socket outlets - double.

- 1: Mounting height of the masts to be determined by structural engineer
- 2: Electrical fittings and equipment are to Electrical Engineer's specifications, please consult this office
- 3: Higher level of coordination is called upon amongst all disciplines, eg. electrician, fitter
- 4: Samples of the light fittings to get approval first before procurement of the rest
- 5: All lighting loads shall be wired using 4.0 sq mm x 3 core flex
- 6: All photo sensors to be mounted on the DB/feeder pillar. The position to be agreed on site
- 7: All override switches to be mounted at the connecting block
- 8: Light fittings to be protected by 5A SP MCB on each light pole. Details to be made available on the light pole
- 9: The contractor to supply 110 x 5A MCBs to be mounted on each pole light

MINISTRY OF LOCAL GOVERNMENT AND PUBLIC WORKS P.O. BOX CY441, CAUSEWAY ZIMBABWE		MINISTRY OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE CHIRUNDU	
Design: G. Marandza Drawn: G. Marandza Checked: M. Siliwa		Title: N.T.S. Date: SEPTEMBER 2021 Description: PROPOSED SOLAR PLANT: OLD BRIDGE Details: DISTRIBUTION BOARD SCHEMATICS	
Telephone: 790 137 / 704079		Stock Draw No	
Project No: 112587/21/04		G.P. No	

SECTION 8

APPENDIX TO BILL OF QUANTITIES

8.1. APPENDIX 1

PREAMBLE TO BILLS OF QUANTITIES

- 8.1.1** The Bills of Quantities shall be read in conjunction with Instructions to Tenderers, Form of Tender, Conditions of Contract, Schedules, Drawings and Specifications. The Contractor shall be deemed to have examined the drawings and to have acquainted himself with the detailed description of the works to be carried out and the manner in which they are to be carried out and the specific requirements and standards of the finished works.
- 8.1.2** The quantities set down against the items in the Bills of Quantities are an estimate of the quantity of each kind of work included in the sub-contract and are therefore subject to re-measurement during the progress or on completion of the works. The re-measured works shall be paid for at the rates and prices entered in the Bills of Quantities.
- 8.1.3** The Bills of Quantities are not intended for the ordering of material except at the Sub-Contractor's own risk.
- 8.1.4** Unless expressly stated to the contrary, all items shall be measured and paid for net, no allowance being made for cutting, waste and all other contingent work, the cost of which shall be deemed to be included in the Tendered Rates.
- 8.1.5** The Contractor's rates and prices entered in the Bills of Quantities shall include for all costs and expenses which may be required in and for the execution of the works described together with all general risks, liabilities and obligations set for the or implied in the tender document.
- 8.1.6** A rate or a price or the word NIL shall be entered in ink against each item to the Bills of Quantities as required. Where no rate or price is entered against an item the cost of the work shall be deemed to be included in other rates and prices whether or not the word NIL is entered. The Engineer shall have the right to ask the Contractor to indicate under which other item(s) these unpriced item(s) have been allowed for.
- 8.1.7** Descriptions of items in the Bills of Quantities have been kept as brief as possible. The Contractor shall ensure that he understands the full extent of each item by reference to the relevant sections of the tender document.

8.1.8 No alteration is to be made to the Bills of Quantities without the written permission of the Engineer.

8.1.9 Any items, materials and equipment shown on the drawings and not shown in the Bills of Quantities shall be brought to the attention of the Engineer at least seven days before the close of tender.

Any subsequent claims for revision of the accepted price will not be considered now liability admitted in respect of such discrepancies.

All cable lengths shown in the Bill of Quantities are for tendering purposes only. All cable lengths are subject to measurement during the progress or on completion of works.

8.1.10 If the discrepancies are not brought to the attention of the Engineer, it shall be noted that the drawings, the specification and Bills of Quantities form a complete tender document. Therefore any item, materials and equipment not shown on the Bills of Quantities but shown on the drawings shall be deemed to be part of the tender document and shall therefore be priced.

8.2. BASIC COST RATE/BASIC PRICE

The tender is to provide the basic price of the materials per unit as per their attached quotations from various suppliers. If the basic prices filled in the Specification do not tally with those on the attached quotations the Tender will be disqualified.

8.3. INSTALLED PRICE

This price is also per unit of materials but shall include the Tenderer's mark up, labour and transport. This price is the sum of the basic price plus the mark percentage, plus labour on the installation of the materials per unit plus transport.

8.4. TOTAL INSTALLED PRICE

Total installed price is the resultant from the installed price multiplied by the quantity of the materials as specified in the Bill of Quantities.

.....
SIGNATURE OF TENDERER

.....
DATE

SECTION 9

ELECTRICAL INSTALLATION

BILL NO.1

ELECTRICAL RETICULATION : CHIRUNDU ONE STOP BORDER POST.

NO.	ITEM DESCRIPTION	QTY (A)	BASIC PRICE (B)	INSTALLED PRICE (C)	TOTAL INSTALLED PRICE (A X C)
1.	<u>DISTRIBUTION BOARDS SURFACE/FEEDE R PILLAR.</u> Sub DB/Feeder Pillar (Rehabilitation)	3	\$	\$	\$
2.	<u>LIGHTING SWITCHES</u> 10A 1 gang 1 way Photo sensor (16A electronic)	10 10	\$ \$	\$ \$	\$ \$
3.	<u>LIGHTING FITTINGS INCLUDING LAMPS</u> Type A Type B	33 5	\$ \$	\$ \$	\$ \$
4.	<u>13A SWITCHED SOCKET OUTLETS</u> Socket outlets 13A D	3	\$	\$	\$
5	<u>MCBs</u> (refer to DB Schematics drawing) 10 Amp SP MCBs	30	\$	\$	\$
6	<u>ISOLATORS</u> 160 A MCB TP 100 A MCB TP 60 A MCB TP	1 4 3	\$ \$ \$	\$ \$ \$	\$ \$ \$

	Fluke 1664 DMS Circutor – CIRe3 (Analyzer for energy Audits)	1 1	\$ \$	\$ \$	\$ \$
NO	ITEM DESCRIPTION	QTY (A)	BASIC PRICE (B)	INSTALLED PRICE (C)	TOTAL INSTALLED PRICE(A X C)
7	<u>CONDUITS AND ACCESSORIES</u>				
	Micron plastic paper (danger warning sign)	350 m	\$	\$	\$
	4.0 x 35 mm wood screws	1 box	\$	\$	\$
	S6 fisher plugs	1 box	\$	\$	\$
8	<u>DUCTS AND ACCESSORIES</u>				
	50mm x PVC class E/4/6 ducts	5 lengths	\$	\$	\$
	50 mm x PVC 90 degree bends class E/4/6	20	\$	\$	\$
9	<u>CABLES</u>				
	4.0 sq mm x 3 core flex cable (white/black)	5 rolls (500 m)	\$	\$	\$
	16 sq mm x 4 core SWA cable	300 m	\$	\$	\$
	16 sq mm earth wire	500 m	\$	\$	\$
11	<u>ANY OTHER ITEMS</u>				
	32 teethes hacksaw blades	1	\$	\$	\$
	CV 300 cable ties	5 packets	\$	\$	\$
	CV 150 cable ties	2 packets	\$	\$	\$
	Insulation tape 3M type [red, yellow, blue, lack.]	4	\$	\$	\$
12	<u>LABELS</u>				
	Incomer	lot	\$	\$	\$
	Mains	lot	\$	\$	\$
	lights	lot	\$	\$	\$

12	spare	lot	\$	\$	\$
	Any items deemed necessary to make the installation				
			\$	\$	\$
	Accessories	lot	\$	\$	\$

All labour and material in making the installation complete US\$.....

Total Price Carried Forward to Price Summary US\$.....

BILL NO. 2

LIGHT MASTS : CHIRUNDU ONE STOP BORDER POST.

NO.	ITEM DESCRIPTION	QTY (A)	BASIC PRICE (B) US\$.....	INSTALLED PRICE (C) US\$.....	TOTAL INSTALLED PRICE (AxC) US\$.....
1	<u>FITTINGS</u>				
	Light Masts, Polygonal and galvanized (Refer to structural designs)	9 no.			
	Angle Iron (to structural engineer's specification)	45 m			
	Air terminals (copper) with mountable brackets	10			
	Earth mates 1.2 m	10			
	Fluke 355 Clamp Meter	1			
2.	<u>CIVILS.</u>				
	Civil Works including stub columns	9			
3.	<u>ANY OTHER ITEMS</u>				
	Any items deemed necessary to make the installation complete				

		lot			

SECTION 10

GENERAL REQUIREMENTS FOR MATERIALS AND RETICULATION

This Schedule and supplementary specification shall be read in conjunction with the Standard Electrical Specification, Third Edition (1973) and the CAS Wiring Rules.

The Contractor's submission of a tender based on this supplementary Specification shall be accepted as proof that he was in possession of a copy of the above Standard Electrical Specification at the time of submitting his tender and that his tendered price was based upon the requirements of that document.

10.1. GENERAL

This Specification covers the Lighting layout in the following:
Chirundu One Stop Border Post facilities.

10.2. The Electrician shall be responsible for connecting the supply cables to the respective and switching On of the supplies.

10.3. Armoured Cable: The electrician shall supply and install all cables in accordance with Section 4 SES
All cable length passing across walkways shall be enclosed in PVC ducts.

10.4. CABLE TRENCHES

- (a) All cable trenches shall be 1000mm deep x 500mm wide. Cables shall be laid on 75mm sand a riddled earth carpet covered by 75mm sand blanket and 225mm x 150mm cable warning tiles to B.S. 2484 or equivalent. The earth shall be reinstated in 100mm layers hand ramming the first 2 layers.
- (b) A 300mm wide micron rot resistant polythene cable warning tape shall be installed at 500mm below ground level and above cables. Separate warning tapes shall be provided for each 1000mm width of trench.
- (c) All trenching and the supply and installation of PVC ducts including draw wires shall be the responsibility of the electrical Sub-Contractor.
- (d) All PVC cable ducts shall enter buildings via gently sweep bends.
- (e) Directly below each cable marker, all cables shall be labelled to indicate size, type, voltage rating and function of cable. Engraving shall be done on a "Rot Resisting" material for this purpose.

- (f) For such sizes into building see respective building layout drawing.

SECTION 11

SCHEDULE OF BASIC PRICES

12.1 ESCALATIONS FOR MATERIALS

Orders for purchase of materials shall be placed with all of the contractor's suppliers within four weeks from site handover.

Photocopies of these orders shall immediately be submitted to the Project Engineer, and shall be the basis for claims of fluctuation in prices.

It is brought to the attention of the contractor that he shall only change Suppliers with the written authority of the P.E. upon submission of documents from the supplier stating his grounds for failure to meet his obligations

12.2.1 ESCALATIONS FOR LABOUR

The contractor shall complete a schedule of his labour rates for both skilled and unskilled workers he intends to employ during the contract.

Such numbers shall be changed with the approval of the Project Engineer from time to time due to fluctuations in workload during the course of the construction period.

The contractor shall also clearly show the build-up of his workers' wages i.e. he shall stipulate the National Employment Council (NEC) for the Construction Industry of Zimbabwe contribution such as Pension and General funds.

The rates so specified shall be the basis for future escalations in labour rate. However if no rates are specified the current labour stipulated by the N.E.C shall be applied. No contributions shall be applied to temporary or casual labourers

DESCRIPTION	<u>\$(PER HOUR)</u>
Skilled Worker 1	\$
Skilled Worker 2	\$
Skilled Worker 3	\$
Skilled Worker 4	\$
Installation Wiremen	\$
Worker Grade 1	\$
Worker Grade 2	\$
Worker Grade 3	\$
Worker Grade 4	\$
Guards and watchmen	\$
Any other (specify)	\$

Signature.....Date.....

SECTION 12

PRICE SUMMARY

13.1. The Contractor shall complete this form and return this specification, drawings and form of tender when these completed documents are called for:

The following prices are to be entered having been brought forward from section 9 to 11

(a) Brought forward from Bill No.1	US\$.....
(b) Brought forward from Bill No.2	US\$.....
(c) SUB-TOTAL	US\$.....
(d) Contingency 10%	US\$.....
(e) SUB TOTAL	US\$.....

13.2 Provide Provisional Sum to be used only as directed by The Foreign Affairs and International Trade and to be deducted whole or in part as instructed during progress of work.

(a) For unspecified work US\$.....

(b) For cable adjustment US\$.....

Total carried forward to Form of Tender US\$.....

(1) Tenderers must note that they will only be considered for recommendation when all tender documents including specification and drawings are submitted at the time of tender.

(2) Tenderers to submit a schedule of basic prices for materials and accessories for the whole of the electrical installation.

(3) **Tenderers to submit a schedule of basic rates for various categories of labour upon which the tender is based on the date of tender.**

(4) No material increases will be paid unless accompanied by the supplier invoices and tenderers order clearly stating project name, contract number and dates. All adjustment will be nett with no allowance for profit, etc. All claims for increased labour costs must be accompanied by the original workers sheets.

NAME OF ELECTRICAL CONTRACTOR.....

ADDRESS.....

.....

.....

TELEPHONE.....

.....
SIGNATURE OF CONTRACTOR

.....
DATE

ANNEXURE 2
CONTRACT FOR SUPPLY, DELIVERY AND INSTALLATION OF BORDER
LIGHTING EQUIPMENT.

PROCUREMENT REF: ZIM/CHNDU/EU/TFP/BORDER LIGHTING
EQUIPMENT/05/21

THE GOVERNMENT OF ZIMBABWE

MINISTRY OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE.

SPECIFICATIONS AND BILLS OF QUANTITIES FOR THE
SUPPLY, DELIVERY TO SITE, INSTALLATION AND COMMISSIONING
OF A 360 KW (400 KVA) SOLAR PLANT

AT

CHIRUNDU ZIMRA ONE STOP BORDER POST,
COMESA TRADE FACILITATION PROJECT

IN

CHIRUNDU, ZIMBABWE

Ministry of Foreign Affairs and International Trade
Munhumutapa Building
Corner Samora Machel and Sam Nujoma
Contractor

.....

Physical Address.....
.....
.....

Tender Closing Date

ELECTRICAL INSTALLATION

I N D E X

	Page No.
Section 1 Form of tender	2
Section 2 Mandatory Conditions of Tender	5
Section 3 Scope of Work	11
Section 4 Definitions	12
Section 5 Conditions of Contract	13
Section 6 General Requirements for Materials & Installation	17
Section 7 Appendix to Bills of Quantities	23
Section 8 Bill of quantities	25
Section 9 Schedule of Basic Prices	28
Section 10 Price Summary	29

SECTION 1

THE GOVERNMENT OF ZIMBABWE
MINISTRY OF FOREIGN AFFAIRS AND INTERNATIONAL
TRADE

FORM OF TENDER

**Ministry of Foreign
Affairs and
International Trade**

TENDER No.....

CLOSING DATE.....

I/We having read the conditions and procedures of Tender overleaf and having also read and carefully considered the relevant drawings, specifications, Bills of Quantities, Articles of agreement and Conditions of contract do here by offer to provide everything necessary for the proper execution and completion, all in accordance with the said documents and to the reasonable satisfaction of the Secretary for The Ministry of Foreign Affairs and International Trade, Munhumutapa Building, Harare.

.....
For the sum
of:.....

In words
.....
.....
.....
.....(in block letters)

I/We undertake to complete the works included in the Tender Documents in accordance withinMONTHS and agree that liquidated and ascertained damages for non-completion shall be 0.05% of the contract sum per week.

Assignment or Sub-letting

I/We propose subletting the trades listed below to the companies registered by the
Registrar of Companies listed against the trade:

TRADE

SUB-CONTRACTOR

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

I/We confirm that the above sub-contracts constitute.....percent of the
contract value.

I/We agree that after the contract has been accepted no variation in the approved
subcontractors will be permitted without prior consent of the Secretary for Foreign
Affairs and International Trade

Name of Tenderer in:

Block letters or Rubber
stamp.....

Address of
Tenderer.....

Signature of
Tenderer.....Date.....

The following must be completed by the proposed suretor.

In the event of this tender being accepted I/We undertake to provide a Surety Bond.

Signature of
Suretor:.....Date.....

Company
Stamp.....

NOTE ON FLUCTUATIONS:

The tenderer is advised that claims for fluctuations in the costs of materials and labour are to be submitted not more than three months after the costs are incurred. Any claims for costs submitted more than three months after they are incurred will render the claims invalid and unacceptable. The tenderer must submit basic price list from established manufacturers with the tender. Failure to do so the rates priced in the Bills of Quantities will be taken to be fixed.

SECTION 2

MANDATORY CONDITIONS OF TENDER

- 1) No qualification shall be in contravention of the Terms of References stated in the Instruction to Tenderers, specification and Notice to Tenderers.
- 2) Only tenderers in the category specified on advert will be considered.
- 3) Tenderers must ensure that they are registered with the Ministry of Foreign Affairs and International Trade.
- 4) Offers must hold good for 90 days from the closing date and tenderer must confirm this in writing.
- 5) Tenders must attach a valid tax clearance certificate to the bid.
- 6) Bids should be submitted with a basic price list for labour, plant and materials together with pro-forma invoices from reputable suppliers.
- 7) Not less than three copies of all tender documents shall be submitted by the Tenderer and Original shall be clearly marked.
- 8) Tenderers should submit a bank statement of not less than twelve (12) months and proof for any lines of credit.
- 9) Tenderers **must** complete the form of tender attached.
- 10) **All tenderers are required to attend the compulsory site visit and attach site visit certificate to the tender documents. (Unless tenderers have been notified in writing or on advert that there will not be need for site visit)**

NOTICE TO TENDERERS

1. Compulsory tender site visit:

There shall be a compulsory site visit to familiarise tenderers with the project they are tendering for. The compulsory site visit will be on dates specified in the tender document

2. Return of documents:

a) The bidder shall return the full set of documents, and only those documents issued out by the client in the invitation to tender. Each document shall be marked with bidder's stamp; this includes every drawing issued with the invitation to tender.

b) The said documents shall be comprised of the following:

1. Form of tender
2. Specifications/Bills of Quantities
3. Drawings
4. Engineer or supervising officer's response to queries.

3. Scope of works:

The works comprises supply, delivery to site, installation and commissioning ofas per attached drawings and specifications.

4. Drawings:.....

As per drawings list attached.

5. Description of site:

The site of the proposed works is locatedContractor to contact the architect/engineer for the specific location of the site.

6. Examination of Site

The contractor is required to visit the site and examine the site prior to submitting his priced document and acquaint himself with the local conditions, access, the extent and nature of the operations, supply of and conditions affecting labour and execution of the works in general.

7. Confinement of building operations:

The contractor shall not, in the execution of the works enter upon or otherwise make use of any adjoining the site of the works without the consent of the Architect/Engineer or without the consent of the owner of such adjoining lands having been previously obtained, but shall (except with such consent) confine his operations within the site of the works. No trespassing beyond the limits as above described will be allowed.

8. Bills of Quantities:

These bills of quantities/Specifications contain pages numbered 1 – 30 as indexed with annexes by **MINISTRY OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE**. The contractor is required to check the number of pages and should any be found to be missing or in duplicate or figures or letters in distinct or contain obvious errors, doubtful, or ambiguous descriptions, the contractor must inform the architect/engineer, quantity surveyor at once and have the same rectified in writing. No liability whatsoever will be admitted in respect of errors in the document due to the foregoing. *Please note that the abbreviation R.O shall mean “Rate only”.*

The bill of quantities shall not be used for ordering materials. Rejection of materials ordered contrary to this provision shall be the contractor sole liability.

9. Pricing bills of Quantities:

The individual rates in the Bill of Quantities are to be exclusive of value added tax (V.A.T.). V.A.T. should however be added in the space provided in the final summary page of this document. Prices and quotations obtained from suppliers /subcontractors for pricing purposes should however include VAT. If the contractor is in any doubt, he should consult the Architect/Engineer.

The contractor must be a registered operator in terms of Value Added Tax Act and must produce proof of registration.

All items in the Bills of Quantities shall be priced and extended in black ink. All pages are to separately cast and the separate casts carried to the collection page provided at the end of each bill.

Should the contractor not price any particular item, he is to write hyphens thus -----in the money column opposite such item. Failure by contractor to price such item will in no way exonerate him from his responsibilities under such item.

No alteration should be made by the contractor in the text of the bill of quantities. If Any alterations or additions is made by him such an alterations

or additions will not be recognised and the text of the bill of quantities will be rigidly adhered to.

No representation, explanation or statement which in any way alters the pricing document or contract documents made prior to the acceptance of the price or during the progress of the contract shall bind the employer unless such explanation, statement or alteration be made and confirmed in writing by the architect.

10. Submission of tenders

The priced document must be returned to the offices of

.....
..... on

The priced bill of quantities/specification, incorporating the following pages, duly completed are to be submitted in plain envelope:

Form of tender
Labour rates (Current NEC rates.)
Plant and material applicable to authorised day works.
Labour price list
Material price list
Schedule of site personal
Proposed construction programme Proposed
schedule of subcontractors.
Proposed cash flow charts
Schedule of exchange rates at the time of pricing.
Tax clearance certificate
VAT registration certificate.
NSSA Certificate
SHEQ

11. Time of Completion:

The work shall be completed within a period of.....() months.

12. Contract Conditions:

The Tenderers will be required to read and understand fully the **Articles of Agreement and Conditions of Contract 1985, Specifications, Bills of Quantities, Preliminaries and General Bill**. All work will be executed in accordance with the said documents and to the reasonable satisfaction of the employers supervising team.

13. Early ordering of Materials:

As the time of completion of this contract is of the utmost important and also every endeavour is to be made to avoid cost escalations, the contractor will be

required to immediately order all possible materials for the contract on the signing and acceptance of the contract.

14. Drawings:

The schedules of drawings used to prepare these bills of quantities are; Engineering Drawings by the **Ministry of Foreign Affairs and International Trade, Harare.**

20. Evaluation Criteria:

The lowest evaluated tender or most economically advantageous to specification shall be accepted. However the following will also be analysed to determine the award of contract: Reputation, Arithmetical Checks, General trend of pricing and Financial Capability.

21. Confidentiality:

All information relating to examination, clarification, evaluation and comparison of tenders and recommendations shall not be disclosed to tenderers or any other person not officially concerned with such process until the award of contract is announced. No tenderer shall contact the employer on any matter relating to his or her tender. Any tenderer in possession of confidential information will face disqualification.

22. Queries:

Should the Tenderer have any queries regarding the interpretation of the Tender drawings and document, they shall list on the sheet provided and shall be made to the Architect /Engineer.

Queries raised by the contractor shall be addressed to:

To: The Secretary

Ministry of Foreign Affairs and International Trade

P. Bag 4240

Causeway

Harare

Query	Answer
-------	--------

--	--

.....
Signed

.....
Date

SECTION 3

SCOPE OF WORK

The electrical contract comprises the supply, delivery to site, installation and commissioning of a **360 KW (400 KVA) Solar Plant** at Chirundu One Stop Border Post in Chirundu.

This electrical installation is to be carried out in accordance with the current S.A.Z, CAS regulations and the current edition of the I.E.E wiring regulations and the latest edition of the Government of **Zimbabwe Standard Electrical Specification** for the Government Electrical Installation.

The Electrical Contractor shall execute the contract works as detailed in this specification and on the drawings including:-

1. 360 KW Solar Plant and room / cage works.
2. Shielding the solar panels with glasses.
3. Solar panels' mountings (including brackets) and erection of attachments.
4. Distribution board(s) including switch gear.
5. A minimum of 450 KW Inverter.
6. Supply cables including cable support system.
7. Earthing system.

The Electrical Contractor shall include for the supply, delivery to site, off loading, hoisting, erection and commissioning of all materials as detailed in the specification and on the drawings.

SECTION 4

DEFINITIONS.

The following definitions of terms shall apply throughout this specification and to tender and contractual documents.

- 4.1 The CLIENT or EMPLOYER shall mean Ministry of Finance & Economic Development and their duly authorised representatives.
- 4.2. The ARCHITECT shall mean Secretary of the Ministry of Foreign Affairs and International Trade and their duly authorised representatives.
- 4.3. The ENGINEER shall mean the Secretary of the Ministry of Foreign Affairs and International Trade and their duly authorised representatives.
- 4.4. The CONTRACTOR shall mean the firm appointed to carry out the works which are the subject of this specification.
- 4.5.. The works shall mean the supply, delivery, off-loading, handling and installation of all materials and equipment as described in this specification and the drawings which accompany it to complete and commissioning the electrical installation to the entire satisfaction of the Client, the Architect and the Engineer.

SECTION 5

CONDITIONS OF CONTRACT.

5.1. GENERAL.

The contract shall be a Nominated Contract and shall be governed by The Ministry of Foreign Affairs and International Trade Standard Conditions of Contract where applicable.

A copy of these conditions and terms is available for inspection at the offices of The Ministry of Foreign Affairs and International Trade and Tenderers shall acquaint themselves fully with such terms and conditions, and shall include in their tendered price for any cost involved in fulfilling such requirements in so far as they are applicable in this section of the works.

The contract shall include the supply, delivery, erection, fixing, connecting and testing of all materials necessary for the completion of the works described in the specification and/or Standard Electrical Specification and/or the C.A.S. No. C.C.I. 1964 as amended and/or shown on the drawings attached to the contract.

5.2. DRAWINGS.

Standard Drawings shall be supplied by Tenderer and shall be read in conjunction with the specification for details of the **360 KW Solar Plant**. The successful Tenderer shall, **WITHIN TWO WEEKS** of receipt of official notification of acceptance of his tender, submit to the Engineer fully dimensioned sketches of the proposed layout of the plant and accessories for approval. Full working drawings giving details of general layout of panels, equipment, e.g. Inverter, floor ducts shall be submitted.

5.3. PROGRAM TO BE FURNISHED.

The Contractor shall submit to the Engineer, a practicable work schedule in reproducible form.

The schedule shall include as a minimum, a comprehensive bar-chart or other approved diagrammatic means of recording both the planned program and the actual performance of the Contractor's work, and the same shall be in order that the progress of all activities within the Contract may be clearly assessed in relation to the planned program.

5.4 EXECUTION OF WORKS.

The Electrician shall execute the Contract Works and such variation thereof as may be ordered in accordance with this contract in all respects.

5.5 MATERIALS AND WORKMANSHIP.

- (a) The Engineer and or Electrical Inspector shall have the power at any time to inspect and examine any part of the works or any material intended for use in the works. The Electrician shall give all such facilities as the Engineer and or Electrical Inspector may require to be given for such inspection and examination.
- (b) The works shall be executed using only the best workmanship in a workmanlike manner and to the satisfaction of the Engineer and or Electrical Inspector.
- (c) If any materials or workmanship are not in accordance with the provision of the contract to the satisfaction of the Engineer and or Electrical Inspector the same shall, at the cost of the Electrician, be replaced/rectified or reconstructed as the case may be and all rejected material removed from the site.

5.6 PLANT, OFF LOADING AND ERECTION.

The Electrician shall, at his own expense provide all materials, labour, tools and apparatus necessary to execute and complete the works to the satisfaction of The Secretary and shall be fully responsible for the loading and erection of his plant and materials on site.

5.7 VARIATION TO THE WORKS.

The Electrician shall be solely responsible for allowing in his tendered price for the correct quantities of all materials from measurements taken by him on site, and no variations will be approved unless the works are modified, except for underground cable installations.

5.8 COMPLETION OF WORKS.

The works shall not be considered complete according to the contract, until they have been certified by the Engineer to have been completed and tested to his/her satisfaction.

5.9. MAINTENANCE PERIOD.

The maintenance period shall be two years after the installation has been taken over, during which time the Electrician shall make good, when called upon to do so, any defect which may develop under proper use and arising from faulty materials, design or workmanship relative to this specification.

5.10 TENDERED PRICE.

The tendered price shall be net and shall include:-

- (a) All costs and charges that may be necessary to comply with all relevant terms of this specification. Special attention is called to the advisability of insurance against fire, accidents to workmen, and third parties.
- (b) All customs and import duties.
- (c) All other items either necessary or specified.

5.11 FLUCTUATION IN PRICE OF MATERIALS.

Shall be in accordance with section 1.20 Standard Electrical Specification.

5.12. SUB – LETTING OF CONTRACT.

The successful Tenderer shall not assign or further sub – let any portion of the contract without the written permission of The Secretary for Local Gvt & Public Works. The permission shall not be unreasonably withheld and shall not in any way be construed as releasing the successful Tenderer from his obligations and liabilities under the contract.

This clause shall be deemed to apply to all local manufacture that may be undertaken under the contract.

The right is reserved to terminate the contract if the provision of this clause is ignored.

5.13. ROYALTIES FOR PATENTED DESIGNS.

The successful Tenderer shall fully indemnify the Government against any action, claim or demand, cost or expenses arising from or incurred by reason of any infringement of letters, patent, design, trade mark, name copyright or other protected rights in respect of any item of equipment, materials or thing system of usage, fixing, operation or arrangements of equipment supplied under the contract.

All payments and royalties payable in one sum or otherwise by instalments, shall be included in the prices stated in the tender and shall be payable by the successful Tenderer to those to whom they may be due and payable.

5.14 STANDARD ELECTRICAL SPECIFICATION.

The Ministry of Local Government and Public Works Standard Electrical Specification, latest edition, shall apply to the whole of the contract whether or not any specific sections are referred to above.

A copy of this specification may be obtained from the Ministry of Foreign Affairs and International Trade, Head Office, Harare.

The submission of a tender shall be accepted as proof that he was in possession of a copy of the above Standard Electrical Specifications at the time of submitting his tender and that his tendered price was based upon the requirements of that document.

5.15 REDUNDANT MATERIALS.

Shall be delivered to The Ministry of Local Government and Public Works Yard, Chirundu and a signature of receipt shall be obtained from the Electrical Inspector.

5.16 'AS INSTALLED' RECORD DRAWINGS.

The Contractor shall furnish the Engineer with a complete signed transparent plastic set of "As Installed" record drawings and service manuals covering the complete works.

The drawings shall be in sufficient details to enable the Employer to carry out property maintenance and to be submitted three weeks prior to the commencement of the commission period.

5.17. GUARANTEE.

The successful Tenderer will be required to guarantee the equipment supplied for a period of not less than 24 months from the date of commissioning on site. This guarantee will be deemed to cover faulty design, workmanship, materials and the suitability of materials supplied for the duties intended.

5.18 TERMS OF PAYMENT.

Payment will be made as stated hereunder: -

- (i) 80% of the value of equipment on delivery to site.
- (ii) 90% of the value of equipment on installation on site in a sound and acceptable conditions.

(ii) The balance of the Contract Price will be paid six months after the date of acceptance of the equipment, subject to satisfactory operation of the equipment.

SECTION 6

GENERAL REQUIREMENTS FOR MATERIALS AND INSTALLATION

This Schedule and Supplementary Specifications shall be read in conjunction with the Standard Electrical Specification, Third Edition and the C.A.S. Wiring Rules, C.C.I: 1964. The Contractors submission of a tender based on this Supplementary Specifications shall be accepted as proof that he was in possession of a copy of the above Standard Electrical Specifications at the time of submitting his tender and that his tendered price was based upon the requirements of that document.

6.0 GENERAL

This specification covers the installation of a **360 KW, (400 KVA) Solar Plant** at the Chirundu One Stop Border Post facilities in Chirundu that will be specified below.

- **At least 450 KW Inverter**
- **Battery Bank Cage**
- **Batteries, (Lithium type) indicate capacity and capacity for each**
- **Solar Charge Controller**
- **Solar Panels, (iPV modules)**
- **Glasses for solar panels shielding**
- **Customised structures specific to engineering challenges**

Tenderers shall note that the works covered in this section are primarily carried out by Specialist Contractors.

Tenders **must** include details of the following in their proposal:

1. Proposed method of installation.
2. Outline of installation.
3. Availability of spare parts locally.
4. Delivery periods.
5. Similar installations they have successfully carried out.

6.1 SCOPE OF WORK

6.1.0. SOLAR PLANT

GENERAL

- 6.1.1. The electrical Contractor shall supply, install, test and commission the above stated Solar Plant. The mechanical structures of the Solar Plant shall be sufficiently strong and rigid to withstand handling and installation operations without risk.

6.1.2. The Solar Plant shall be the Primary source, solid state type and of the latest commercial type and design. ZETDC power and Stand by Generator set power being Secondary sources 1 & 2 respectively. The Solar Plant shall be able to provide high quality power conditioning and back-up power protection.

The Contractor shall take due account of the altitude, temperature and humidity that is in Chirundu and shall provide system sets which shall need,

- Nominal output voltage of 400V 3phase
- output frequency of 50 Hz +/- 1%
- Input connections of hard wire 5 wire (3 phase + N + G) □ Input voltage range (to be determined by system design)
- Other input voltages are 380, 415, 450 V
- Input total harmonic distortion, less than 3% for full load
- Type of input protection required is a 4/3 pole breaker
- Battery type is Lithium or any other approved by the Perm. Secretary

6.1.3. The Solar Plant shall be capable of producing

- nominal output voltage of 415 V 3phase 5 wire,
- output voltage note configurable for 380V, 400/415V 3 phase,
- output voltage distortion less than 2%,
- output frequency of (synchronous to mains) 50 Hz,
- other output voltages of 380V, 400V, 415V,
- crest factor of 3:1,
- topology being double conversion online,
- with output connections of
 - hard wire (3 phase),
 - hard wire 4 wire (3 phase), + G
 - hard wire 4 wire (3 phase), + N
 - hard wire 4 wire (3 phase), + PEN
 - hard wire 5 wire (3 phase), + N + G
- Output voltage THD of less than 2% linear load and less 3% non linear load.
- Overload operation of 10 minutes at 125% for 30 seconds at 150%
- Bypass is a built in maintenance bypass.

The output voltage of 380V, 4 wire three phase, 50 Hz rating shall conform with ISO 3046 and BS 5514 and BS 7671: 1992 IEE Regulations Chapter 55.

6.1.4. Energy use / Efficiency

LOAD	EFFICIENCY
25%	87.0%
50%	91.9%
75%	93.1%
100%	93.2%

6.1.5 INFORMATION TO BE FURNISHED WITH TENDER

The tenderer shall furnish in his submitted tender the following information:-

- (a) Drawings of the Solar Plant installation diagrams offered.
- (b) Literature describing the Solar Plant and indicating its current production status.
- (c) Drawings and or literature describing auxiliary equipment to be furnished.
- (d) The following data in tabulated form:
 1. Make and type of Solar Plant equipment e.g. Inverter, Charge Controller(s), Battery Bank, Solar Panels, (iPV modules), MCBs e.g. Merlin Gerin, Schneider and e.t.c. or any other approved by this office of The Ministry of Foreign and International Trade.
 9. The Solar Plant electrical rate in KVA or KW at 0.9 power factor.

6.1.6 SYSTEMS CONTROL, INDICATORS AND ACCESSORIES

The Solar Plant shall have a

- Front Panel LCD Display. The Inverter Face Control panel shall provide an LCD display. The indication of the system metering, status, battery status, alarm event log and advanced operational features will be available.
- Systems Parameters Monitored (Data displayed).
- During the day, power from panels through the inverter shall supply the load and some shall charge the batteries.
- During the night the power from the battery bank shall feed the load for at least 18 hours continuous to a point where the power from the panels would be available. The system should pick up that.
- There shall be some form of indicators in at least three offices showing that the system is running on solar power, ZETDC power and or generator power.

6.2.0 PART AND SERVICES

The Solar Plant Supplier shall be an authorised dealer by the Solar manufacturer(s) and shall be factory trained and authorised to provide services and parts of the plant at any time during the day or night. A description of the service and parts support capability shall be included with submitted documents.

6.2.0 MAINTENANCE

The successful Tenderer shall furnish two copies of operating and maintenance instruction and illustrated parts books covering the Solar Plant and auxiliary equipment which will require operating instructions and periodic maintenance.

The Tenderer shall also offer operating and maintenance training to the technical team from The Ministry of Foreign Affairs and International Trade

The Solar Plant Supplier shall include in his tender bid allowances/costs for at least two visits to the manufacturer of the Solar IPV modules on a monthly basis for the first and second fixtures by a design team comprising Electrical, Mechanical and Architect. The purpose shall be to have pre factory inspections on the equipment, panels and e.t.c.

6.3.0 WARRANTY

The units offered under this specification shall be covered by the Manufacturers Standard warranty or Guarantee on new equipment and shall include 100% parts and labour coverage.

6.3.1 THE SOLAR PLANT TECHNICAL DATA AND GUARANTEE

To be completed by the Contractor. Copies of manufacturer's data to be attached to the specification and this section should be fully completed.

(a) The Solar Plant

1. Makers Name
2. Country of ORIGIN
.....
3. Type and Model No.
.....
- 4.. a. Temperature of IPV modules
(1) Operating:
(1) Non operating:
b. Temperature of Batteries:
5. Relative Humidity
.....
6. Audible Noise
.....

6.3.2 STANDARD ELECTRICAL SPECIFICATION

The Ministry of Local Government and Public Works Standard Electrical Specification, latest edition, shall apply to the whole of the contract whether

or not any specific sections are referred to above. A copy of this specification may be obtained from The Ministry of Foreign Affairs and International Trade, Harare Zimbabwe.

6.3.3 SIMILAR APPROVALS:

If similar items are shown other than those specified in this document, the items concerned must be approved by the Project Engineer or the Deputy Director Electrical Engineering Services of The Ministry of Foreign Affairs and International Trade before installations on site.

If approval is not sought the contractor shall remove all such items from site at his own cost.

6.3.4 SCHEDULE OF ALTERNATIVES OFFERED

Should the Tenderer want to propose alternatives for particular items he/she should give full details hereunder including price adjustments.

This is in addition to submitting a tender document as specified.

If no alternatives are proposed the Tenderer shall write "NIL"

ITEM	REASON	PRICE FLUCTUATION	
		POSITIVE <i>RTGS\$.....</i>	NEGATIVE <i>RTGS\$.....</i>

Signature.....Date.....

SECTION 7

APPENDIX TO BILL OF QUANTITIES

7.1. APPENDIX 1

PREAMBLE TO BILLS OF QUANTITIES

- 7.1.1. The Bills of Quantities shall be read in conjunction with Instructions to Tenderers, Form of Tender, Conditions of Contract, Schedules, Drawings and Specifications. The Contractor shall be deemed to have examined the drawings and to have acquainted himself / herself with the detailed description of the works to be carried out and the manner in which they are to be carried out and the specific requirements and standards of the finished works.
- 7.1.2. The quantities set down against the items in the Bills of Quantities are an estimate of the quantity of each kind of work included in the sub-contract and are therefore subject to re-measurement during the progress or on completion of the works. The re-measured works shall be paid for at the rates and prices entered in the Bills of Quantities.
- 7.1.3. The Bills of Quantities are not intended for the ordering of material except at the Contractor's own risk.
- 7.1.4. Unless expressly stated to the contrary, all items shall be measured and paid for net, no allowance being made for cutting, waste and all other contingent work, the cost of which shall be deemed to be included in the Tendered Rates.
- 7.1.5. The Contractor's rates and prices entered in the Bills of Quantities shall include for all costs and expenses which may be required in and for the execution of the works described together with all general risks, liabilities and obligations set for the or implied in the tender document.
- 7.1.6. A rate or a price or the word NIL shall be entered in ink against each item to the Bills of Quantities as required. Where no rate or price is entered against an item the cost of the work shall be deemed to be included in other rates and prices whether or not the word NIL is entered. The Engineer shall have the right to ask the Contractor to indicate under which other item(s) these unpriced item(s) have been allowed for.
- 7.1.7. Descriptions of items in the Bills of Quantities have been kept as brief as possible. The Contractor shall ensure that he understands the full extent of each item by reference to the relevant sections of the tender document.
- 7.1.8. No alteration is to be made to the Bills of Quantities without the written permission of the Engineer.
- 7.1.9. Any items, materials and equipment shown on the drawings and not shown in the Bills of Quantities shall be brought to the attention of the Engineer at least seven days before the close of tender.
Any subsequent claims for revision of the accepted price will not be considered now liability admitted in respect of such discrepancies.

All cable lengths shown in the Bill of Quantities are for tendering purposes only. All cable lengths are subject to measurement during the progress or on completion of works.

7.1.10. If the discrepancies are not brought to the attention of the Engineer, it shall be noted that the drawings, the specification and Bills of Quantities form a complete tender document. Therefore any item, materials and equipment not shown on the Bills of Quantities but shown on the drawings shall be deemed to be part of the tender document and shall therefore be priced.

7.2. BASIC COST RATE / BASIC PRICE

The tender is to provide the basic price of the materials per unit as per their attached quotations from various suppliers. If the basic prices filled in the Specification do not tally with those on the attached quotations the Tender will be disqualified.

7.3. INSTALLED PRICE

This price is also per unit of materials but shall include the Tenderer's mark up, labour and transport. This price is the sum of the basic price plus the mark up percentage, plus labour on the installation of the materials per unit plus transport.

7.4. TOTAL INSTALLED PRICE

Total installed price is the resultant from the installed price multiplied by the quantity of the materials as specified in the Bill of Quantities.

.....
SIGNATURE OF TENDERER

.....
DATE

SECTION 8

BILL OF QUANTITIES

BILL ONE [1] : SOLAR PLANT EQUIPMENT

DESCRIPTION	QTY	UNIT RATE SUPPLY US\$.....C	UNIT RATE INSTALL US\$.....C	TOTAL US\$.....C
[01] 450 KW Inverter (minimum size)	1			
[02] Solar Panels, (IPV) modules (provide specifications)	No.			
[03] Glasses for solar panels' shielding, (give specifications)	1			
[04] Solar Batteries, Lithium (provide size & number)	No.			
[05] DC Breaker	1			
[06] AC Breaker	1			
[07] Automatic Voltage Regulator, (AVR/AVS)	1			
[08] Fluke 1664 (The Fluke DMS)	1			
[09] Circutor – CIRE3. (Portable Analyzer for energy Audits)	1			
[10] 16 sq mm cables (for solar batteries)	lot			
[11] 120 sq mm x 4 core swa cables	Rate/m			
[12] 70 sq mm x earth wire	Rate/m			
<u>SUB TOTAL BILL ONE</u> <u>[1]Carried to Summary</u>			US\$	US\$

.....
SIGNATURE OF CONTRACTOR

.....
DATE

BILL TWO [2] : SOLAR PLANT MOUNTING STRUCTURES

DESCRIPTION	QTY	UNIT RATE SUPPLY US\$.....C	UNIT RATE INSTALL US\$.....C	TOTAL US\$.....C
[01] Ground mount Members/Rails, Steel or Aluminium	1			
[02] Trunking & accessories (galvanized)	No.			
[03] Surface junction boxes (galvanized)	1			
[04] Antitheft Clips Including mountings for shielding glasses	No.			
[05] Lightning Protection Material including Earth mates, (3)	1			
[06] Civil Works (including stub columns)	lot			
[07] Crimping tool (10 sq mm – 300 sq mm) Hydraulic	1			
[08] Battery Bank Cage (to arch. specifications)	1			
[09] Fluke 1555 (10KV Insulation Resistance Tester)	1			
[10] Lugs (various sizes)	lot			
[11] Accessories	lot			
[12]				
<u>SUB TOTAL BILL ONE</u> <u>[1]Carried to Summary</u>			US\$	US\$

SIGNATURE OF CONTRACTOR

DATE

COMPLETION TIME

(a) Time required to ordering, manufacture and delivering to site items of plant
.....weeks

(b) Time required for erection,
commissioning and testing.....weeks

Total time to complete the generator installation.....weeks

BILL THREE [3]

DESCRIPTION	QTY	UNIT RATE SUPPLY	UNIT RATE INSTALL	TOTAL
		USD\$.....C	USD\$.....C	USD\$.....C
Training of personnel for operation and routine maintenance	5 NO			
<u>SUB TOTAL BILL Three [3] Carried to Summary</u>			USD\$	

.....
SIGNATURE OF CONTRACTOR

.....
DATE

SECTION 9

SCHEDULE OF BASIC PRICES

9.1 ESCALATIONS FOR MATERIALS

Orders for purchase of materials shall be placed with all of the Contractor's Suppliers within four weeks from site handover.

Photocopies of these orders shall immediately be submitted to the Project Engineer, and shall be the basis for claims of fluctuation in prices. It is brought to the attention of the Contractor that he/she shall only change suppliers with the written authority of the Engineer upon submission of documents from the supplier stating his grounds for failure to meet his/her obligations.

9.2 ESCALATIONS FOR LABOUR

The Contractor shall complete a schedule of his labour rates for both skilled and unskilled workers he intends to employ during the contract.

Such numbers shall be changed with the approval of the Project Engineer from time to time due to fluctuations in work – load during the course of the construction period.

The Contractor shall also clearly show the build-up of his workers' wages i.e. he shall stipulate the National Employment Council (NEC) for the Construction Industry of Zimbabwe contribution such as Pension and General Funds.

The rates so specified shall be the basis for future escalations in labour rate. However if no rates are specified the current labour stipulated by the N.E.C shall be applied. No contributions shall be applied to temporary or casual labourers

<u>DESCRIPTION</u>	<u>US\$/HOUR</u>
Skilled Worker 1	US\$
Skilled Worker 2	US\$
Skilled Worker 3	US\$
Skilled Worker 4	US\$
Installation Wiremen	US\$
Worker Grade 1	US\$
Worker Grade 2	US\$
Worker Grade 3	US\$
Worker Grade 4	US\$
Guards and watchmen	US\$
Any other (specify)	US\$

Signature.....Date.....

SECTION 10

PRICE SUMMARY

10.1. The Contractor shall complete this form and return this specification, drawings and form of tender when these completed documents are called for:

The following prices are to be entered having been brought forward from section 9 to 11

BROUGHT FORWARD FROM BILL ONE [1]	USD\$
BROUGHT FORWARD FROM BILL TWO [2]	USD\$
BROUGHT FORWARD FROM BILL THREE [3]	
SUBTOTAL A	
ADD 14.5% VAT	
SUBTOTAL B	
ADD 10% CONTIGENCY SUM	USD\$
OTHER COSTS (specify)	
TOTAL CARRIED TO FORM OF TENDER	USD\$

- (1) Tenderers must note that they will only be considered for recommendation when all tender documents including specification and drawings are submitted at the time of tender.
- (2) Tenderers to submit a schedule of basic prices for materials and accessories for the whole of the electrical installation.
- (3) Tenderers to submit a schedule of basic rates for various categories of labour upon which the tender is based on the date of tender.
- (4) No material increases will be paid unless accompanied by the supplier invoices and tenderers order clearly stating project name, contract number

and dates. All adjustment will be net with no allowance for profit, etc. All claims for increased labour costs must be accompanied by the original workers sheets.

NAME OF ELECTRICAL
CONTRACTOR.....

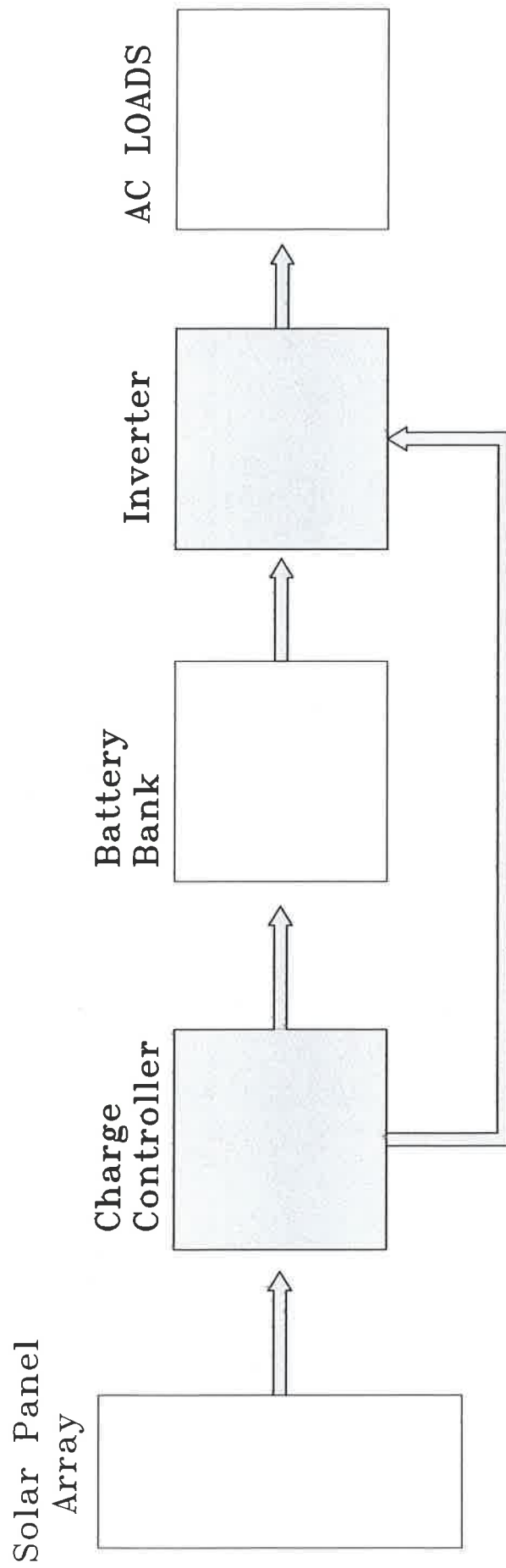
ADDRESS.....
.....
.....

TELEPHONE
.....

.....
SIGNATURE OF CONTRACTOR

.....
DATE

Solar Block Diagram Schematics.



Notes 1. All dimensions are in millimeters unless otherwise stated. 2. All dimensions are to be maintained unless otherwise stated. 3. All dimensions are to be maintained unless otherwise stated.	ASSESSMENT L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12 L13 L14 L15 L16 L17 L18 L19 L20 L21 L22 L23 L24 L25 L26 L27 L28 L29 L30 L31 L32 L33 L34 L35 L36 L37 L38 L39 L40 L41 L42 L43 L44 L45 L46 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57 L58 L59 L60 L61 L62 L63 L64 L65 L66 L67 L68 L69 L70 L71 L72 L73 L74 L75 L76 L77 L78 L79 L80 L81 L82 L83 L84 L85 L86 L87 L88 L89 L90 L91 L92 L93 L94 L95 L96 L97 L98 L99 L100 L101 L102 L103 L104 L105 L106 L107 L108 L109 L110 L111 L112 L113 L114 L115 L116 L117 L118 L119 L120 L121 L122 L123 L124 L125 L126 L127 L128 L129 L130 L131 L132 L133 L134 L135 L136 L137 L138 L139 L140 L141 L142 L143 L144 L145 L146 L147 L148 L149 L150 L151 L152 L153 L154 L155 L156 L157 L158 L159 L160 L161 L162 L163 L164 L165 L166 L167 L168 L169 L170 L171 L172 L173 L174 L175 L176 L177 L178 L179 L180 L181 L182 L183 L184 L185 L186 L187 L188 L189 L190 L191 L192 L193 L194 L195 L196 L197 L198 L199 L200 L201 L202 L203 L204 L205 L206 L207 L208 L209 L210 L211 L212 L213 L214 L215 L216 L217 L218 L219 L220 L221 L222 L223 L224 L225 L226 L227 L228 L229 L230 L231 L232 L233 L234 L235 L236 L237 L238 L239 L240 L241 L242 L243 L244 L245 L246 L247 L248 L249 L250 L251 L252 L253 L254 L255 L256 L257 L258 L259 L260 L261 L262 L263 L264 L265 L266 L267 L268 L269 L270 L271 L272 L273 L274 L275 L276 L277 L278 L279 L280 L281 L282 L283 L284 L285 L286 L287 L288 L289 L290 L291 L292 L293 L294 L295 L296 L297 L298 L299 L300 L301 L302 L303 L304 L305 L306 L307 L308 L309 L310 L311 L312 L313 L314 L315 L316 L317 L318 L319 L320 L321 L322 L323 L324 L325 L326 L327 L328 L329 L330 L331 L332 L333 L334 L335 L336 L337 L338 L339 L340 L341 L342 L343 L344 L345 L346 L347 L348 L349 L350 L351 L352 L353 L354 L355 L356 L357 L358 L359 L360 L361 L362 L363 L364 L365 L366 L367 L368 L369 L370 L371 L372 L373 L374 L375 L376 L377 L378 L379 L380 L381 L382 L383 L384 L385 L386 L387 L388 L389 L390 L391 L392 L393 L394 L395 L396 L397 L398 L399 L400 L401 L402 L403 L404 L405 L406 L407 L408 L409 L410 L411 L412 L413 L414 L415 L416 L417 L418 L419 L420 L421 L422 L423 L424 L425 L426 L427 L428 L429 L430 L431 L432 L433 L434 L435 L436 L437 L438 L439 L440 L441 L442 L443 L444 L445 L446 L447 L448 L449 L450 L451 L452 L453 L454 L455 L456 L457 L458 L459 L460 L461 L462 L463 L464 L465 L466 L467 L468 L469 L470 L471 L472 L473 L474 L475 L476 L477 L478 L479 L480 L481 L482 L483 L484 L485 L486 L487 L488 L489 L490 L491 L492 L493 L494 L495 L496 L497 L498 L499 L500 L501 L502 L503 L504 L505 L506 L507 L508 L509 L510 L511 L512 L513 L514 L515 L516 L517 L518 L519 L520 L521 L522 L523 L524 L525 L526 L527 L528 L529 L530 L531 L532 L533 L534 L535 L536 L537 L538 L539 L540 L541 L542 L543 L544 L545 L546 L547 L548 L549 L550 L551 L552 L553 L554 L555 L556 L557 L558 L559 L560 L561 L562 L563 L564 L565 L566 L567 L568 L569 L570 L571 L572 L573 L574 L575 L576 L577 L578 L579 L580 L581 L582 L583 L584 L585 L586 L587 L588 L589 L590 L591 L592 L593 L594 L595 L596 L597 L598 L599 L600 L601 L602 L603 L604 L605 L606 L607 L608 L609 L610 L611 L612 L613 L614 L615 L616 L617 L618 L619 L620 L621 L622 L623 L624 L625 L626 L627 L628 L629 L630 L631 L632 L633 L634 L635 L636 L637 L638 L639 L640 L641 L642 L643 L644 L645 L646 L647 L648 L649 L650 L651 L652 L653 L654 L655 L656 L657 L658 L659 L660 L661 L662 L663 L664 L665 L666 L667 L668 L669 L670 L671 L672 L673 L674 L675 L676 L677 L678 L679 L680 L681 L682 L683 L684 L685 L686 L687 L688 L689 L690 L691 L692 L693 L694 L695 L696 L697 L698 L699 L700 L701 L702 L703 L704 L705 L706 L707 L708 L709 L710 L711 L712 L713 L714 L715 L716 L717 L718 L719 L720 L721 L722 L723 L724 L725 L726 L727 L728 L729 L730 L731 L732 L733 L734 L735 L736 L737 L738 L739 L740 L741 L742 L743 L744 L745 L746 L747 L748 L749 L750 L751 L752 L753 L754 L755 L756 L757 L758 L759 L760 L761 L762 L763 L764 L765 L766 L767 L768 L769 L770 L771 L772 L773 L774 L775 L776 L777 L778 L779 L780 L781 L782 L783 L784 L785 L786 L787 L788 L789 L790 L791 L792 L793 L794 L795 L796 L797 L798 L799 L800 L801 L802 L803 L804 L805 L806 L807 L808 L809 L810 L811 L812 L813 L814 L815 L816 L817 L818 L819 L820 L821 L822 L823 L824 L825 L826 L827 L828 L829 L830 L831 L832 L833 L834 L835 L836 L837 L838 L839 L840 L841 L842 L843 L844 L845 L846 L847 L848 L849 L850 L851 L852 L853 L854 L855 L856 L857 L858 L859 L860 L861 L862 L863 L864 L865 L866 L867 L868 L869 L870 L871 L872 L873 L874 L875 L876 L877 L878 L879 L880 L881 L882 L883 L884 L885 L886 L887 L888 L889 L890 L891 L892 L893 L894 L895 L896 L897 L898 L899 L900 L901 L902 L903 L904 L905 L906 L907 L908 L909 L910 L911 L912 L913 L914 L915 L916 L917 L918 L919 L920 L921 L922 L923 L924 L925 L926 L927 L928 L929 L930 L931 L932 L933 L934 L935 L936 L937 L938 L939 L940 L941 L942 L943 L944 L945 L946 L947 L948 L949 L950 L951 L952 L953 L954 L955 L956 L957 L958 L959 L960 L961 L962 L963 L964 L965 L966 L967 L968 L969 L970 L971 L972 L973 L974 L975 L976 L977 L978 L979 L980 L981 L982 L983 L984 L985 L986 L987 L988 L989 L990 L991 L992 L993 L994 L995 L996 L997 L998 L999 L1000 L1001 L1002 L1003 L1004 L1005 L1006 L1007 L1008 L1009 L1010 L1011 L1012 L1013 L1014 L1015 L1016 L1017 L1018 L1019 L1020 L1021 L1022 L1023 L1024 L1025 L1026 L1027 L1028 L1029 L1030 L1031 L1032 L1033 L1034 L1035 L1036 L1037 L1038 L1039 L1040 L1041 L1042 L1043 L1044 L1045 L1046 L1047 L1048 L1049 L1050 L1051 L1052 L1053 L1054 L1055 L1056 L1057 L1058 L1059 L1060 L1061 L1062 L1063 L1064 L1065 L1066 L1067 L1068 L1069 L1070 L1071 L1072 L1073 L1074 L1075 L1076 L1077 L1078 L1079 L1080 L1081 L1082 L1083 L1084 L1085 L1086 L1087 L1088 L1089 L1090 L1091 L1092 L1093 L1094 L1095 L1096 L1097 L1098 L1099 L1100 L1101 L1102 L1103 L1104 L1105 L1106 L1107 L1108 L1109 L1110 L1111 L1112 L1113 L1114 L1115 L1116 L1117 L1118 L1119 L1120 L1121 L1122 L1123 L1124 L1125 L1126 L1127 L1128 L1129 L1130 L1131 L1132 L1133 L1134 L1135 L1136 L1137 L1138 L1139 L1140 L1141 L1142 L1143 L1144 L1145 L1146 L1147 L1148 L1149 L1150 L1151 L1152 L1153 L1154 L1155 L1156 L1157 L1158 L1159 L1160 L1161 L1162 L1163 L1164 L1165 L1166 L1167 L1168 L1169 L1170 L1171 L1172 L1173 L1174 L1175 L1176 L1177 L1178 L1179 L1180 L1181 L1182 L1183 L1184 L1185 L1186 L1187 L1188 L1189 L1190 L1191 L1192 L1193 L1194 L1195 L1196 L1197 L1198 L1199 L1200 L1201 L1202 L1203 L1204 L1205 L1206 L1207 L1208 L1209 L1210 L1211 L1212 L1213 L1214 L1215 L1216 L1217 L1218 L1219 L1220 L1221 L1222 L1223 L1224 L1225 L1226 L1227 L1228 L1229 L1230 L1231 L1232 L1233 L1234 L1235 L1236 L1237 L1238 L1239 L1240 L1241 L1242 L1243 L1244 L1245 L1246 L1247 L1248 L1249 L1250 L1251 L1252 L1253 L1254 L1255 L1256 L1257 L1258 L1259 L1260 L1261 L1262 L1263 L1264 L1265 L1266 L1267 L1268 L1269 L1270 L1271 L1272 L1273 L1274 L1275 L1276 L1277 L1278 L1279 L1280 L1281 L1282 L1283 L1284 L1285 L1286 L1287 L1288 L1289 L1290 L1291 L1292 L1293 L1294 L1295 L1296 L1297 L1298 L1299 L1300 L1301 L1302 L1303 L1304 L1305 L1306 L1307 L1308 L1309 L1310 L1311 L1312 L1313 L1314 L1315 L1316 L1317 L1318 L1319 L1320 L1321 L1322 L1323 L1324 L1325 L1326 L1327 L1328 L1329 L1330 L1331 L1332 L1333 L1334 L1335 L1336 L1337 L1338 L1339 L1340 L1341 L1342 L1343 L1344 L1345 L1346 L1347 L1348 L1349 L1350 L1351 L1352 L1353 L1354 L1355 L1356 L1357 L1358 L1359 L1360 L1361 L1362 L1363 L1364 L1365 L1366 L1367 L1368 L1369 L1370 L1371 L1372 L1373 L1374 L1375 L1376 L1377 L1378 L1379 L1380 L1381 L1382 L1383 L1384 L1385 L1386 L1387 L1388 L1389 L1390 L1391 L1392 L1393 L1394 L1395 L1396 L1397 L1398 L1399 L1400 L1401 L1402 L1403 L1404 L1405 L1406 L1407 L1408 L1409 L1410 L1411 L1412 L1413 L1414 L1415 L1416 L1417 L1418 L1419 L1420 L1421 L1422 L1423 L1424 L1425 L1426 L1427 L1428 L1429 L1430 L1431 L1432 L1433 L1434 L1435 L1436 L1437 L1438 L1439 L1440 L1441 L1442 L1443 L1444 L1445 L1446 L1447 L1448 L1449 L1450 L1451 	
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ANNEXURE 3

**CONTRACT TITLE: SUPPLY, DELIVERY AND INSTALLATION OF AIR CONDITIONING
UNITS**

PROCUREMENT REFERENCE: ZIM/CHNDU/EU/TFP/AIR CONDITIONING/10/21



THE REPUBLIC OF ZIMBABWE

CHIRUNDU BORDER REDEVELOPMENT

SPECIFICATION

FOR

THE SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING OF

VENTILATION AND AIR CONDITIONING SYSTEM

AT

CHIRUNDU

IN MASHONALAND WEST PROVINCE

CONTENTS

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SPECIFICATION		TECHNICAL

1.0 GENERAL

The contract will cover the supply, delivery, installation, testing and handing over in full working order with a 12-month guarantee of four (4) 18 000 Btu/Hr. Air Conditioning wall split units and four (4), 24 000 Btu/Hr. Air Conditioning wall split unit Chirundu Border Post in Mashonaland West Province.

1.1 REGULATIONS

All mechanical equipment shall conform to the requirements of the Zimbabwe Factory and Works regulations, published under the government or any amendments promulgated subsequently.

Please note that the preferable model/brand for air-conditioning works are L.G, Samsung, Dunham Bush, Carrier or brands with 10 years or more in existence, using ozone friendly refrigerant gas that is R410A.

1.2 DRAWINGS

Drawing No:is supplied, but the contractor is required to provide detailed installation drawings and As-installed drawings after installation is completed

1.3 CONTRACTOR'S DRAWINGS

The successful Tenderer shall have all his layout and assembly drawings approved in writing by the Engineer before work is commenced on the contract.

1.4 TYPE OF INSTALLATIONS

The air-conditioning subcontractor will carry out the following: supply, delivery, installation, testing, commissioning and provide a 12month guarantee for the items listed below of four (4) 18 000 Btu/Hr. Air Conditioning wall split units and four (4), 24 000 Btu/Hr. Air Conditioning wall split unit at Chirundu Border Post in Mashonaland West Province.

1.5 NOISE LEVEL

The noise level in the rooms shall not exceed noise rating 50dB at 1000Hz centre frequency of octave band.

1.6 FIXING TO STRUCTURES

Fixing of all brackets etc to the structure shall be by means of expansion bolts of redheads shooting will not be allowed into pre-stressed concrete.

1.7 PIPEWORK

All pipe work to be concealed and welded except where otherwise specified.

- a) All pipe work shall be installed in such a manner as to maintain maximum headroom and shall be parallel to or right-angled to adjacent walls.
- b) No section of the pipe-work insulation shall be permanently closed up or insulated until it has been tested and approved as called elsewhere in this specification.
- c) Final connection to equipment shall be flanged over 50mm diameter and made with spherical seated unions up to 50mm. Where a connection is made to equipment, the flange shall be the same as the equipment e.g. pump.
- d) Screw fitting may be banded or pattern and shall be of the taper screw type BS21.
- e) All flanges shall be machined full face and welded to the pipe work as specified. Flange joints shall be made with the approved full-face joint rings and compound all bolts shall be have 15mm free thread when the joint is fully made.
- f) All pipes shall remain capped during installation.
- g) All pipe work shall be installed so as to allow for expansion to eliminate undue stress to either pipe work or equipment.
- h) All pipe work going through wall beams to be sleeved.
- i) Jointing tapes/ compound to be used on all joints.

1.8 ITEM1: Air conditioning unit, wall mounted split unit type

QTY - 4 -

The air conditioning units will be used for heating and cooling and moisture removal in the building.

Features on the units include:

- Cooling capacity of 18 000 Btu/h
- Power input of 2 kW
- Running current of 9.8A
- Power supply: 1phase, 220-240V,50Hz
- Moisture removal of 3.8l/h
- Noise level of 43-50dB • Approximate weight: 20kg.
- Refrigerant: R410A

1.9 ITEM 2: Air conditioning unit, wall mounted split unit type

QTY - 4 -

The air conditioning units will be used for heating and cooling and moisture removal in the building.

Features on the units include:

- Cooling capacity of 24 000 Btu/h
- Power input of 2.2 kW
- Running current of 13A
- Power supply: 1phase, 220-240V,50Hz
- Moisture removal of 3.8l/h
- Noise level of 43-50dB • Approximate weight: 20kg.
- Refrigerant: R410A

SCHEDULE OF PRICES

All prices shall be in United States dollars. The prices on this section shall only be for supply of the equipment plus respective materials (or ancillary equipment) required completing the whole installation of each of the air conditioning units and extract fans tendered for. **The tender shall also quote for the upgrade of the electrical reticulation to the nearest board.**

NOTE: the cost price in this schedule refers to the price of the supplier/manufacturer of the equipment (excluding VAT).

Item	Description of Equipment & Materials	Unit cost	Qty	Total cost
------	--------------------------------------	-----------	-----	------------

	Total Equipment Cost		
--	-----------------------------	--	--	-------

Total to be carried over to form of tender summary USD.....

2.3 MAINTENANCE

The successful tenderer shall also quote for the maintenance costs that are not covered by the guarantee period.

2.4 TRAINING

The successful tenderer shall also quote for basic O&M training for two people. The training shall cover the theory, servicing and simple troubleshooting of the installed equipment.

2.5 ACCEPTANCE TESTING

The contractor also provides an acceptance test document showing the installed equipment, spares, faults and normal operation. The ministry will be involved in these tests and commissioning will only be done when these are successfully conducted.

2.6 TOTAL COST OF ALL EQUIPMENT AND SERVICES (Exclusive of VAT) TO BE CARRIED OVER TO SECTION 10 USD.....

VARIATIONS AND OMISSIONS TO SPECIFICATION

All omissions and variations to the specification shall be set out below making reference to the corresponding clause numbers in the specification in serial order. If the tender is completely in accordance with the specification, the tenderer shall state 'Nil'.

.....
Signature of tenderer

.....
Date & Seal

SCHEDULE OF TECHNICAL PARTICULARS

The generation of the equipment to be used in the installation should be less than 2 years at the time of bidding.

The tenderer shall complete the schedule below giving the manufacturers of the equipment or materials proposed to be used on which the tender is based. Illustrations and catalogues of the equipment covered by the tender must be provided at the time of tendering. No alteration to the equipment or materials offered or the information given will be permitted in the execution of the works unless such alteration is approved by the engineer.

3.0 SUPPLY PARTICULARS

3.1 AIR CONDITIONING wall split unit Type – split unit Cooling capacity - 18 000 BTU/hr

Makers Name Country
of origin..... Model and
type.....
Cooling capacity.....
Heating capacity.....
Air circulation.....
Power rating.....

- a) Current rating of units (max).....
b) Phases of supply required (max).....

REFRIGERANT

- a) type/name of refrigerant.....
b) Saturation vapor density.....

3.2 AIR CONDITIONING wall split unit Type – split unit Cooling capacity - 24 000 BTU/hr

Makers Name
Country of origin.....
Model and type.....
Cooling capacity.....
Heating capacity.....
Air circulation.....
Power rating.....

- a) Current rating of units (max).....
b) Phases of supply required (max).....

REFRIGERANT

- a) type/name of refrigerant.....
b) Saturation vapor density.....

SCHEDULE OF MATERIALS AND BASIC PRICES

- 4.1 Orders for purchase of materials shall be placed with all of the contractor's suppliers *within four weeks from date of receipt of verbal or provisional acceptance letter*. Photocopies of these orders shall immediately be submitted to the project Engineer and shall be the basis for claims of fluctuation in prices.

It is brought to the attention of the contractor that he shall only change suppliers with the Written authority of the Project Engineer upon submission of documents from the original supplier (at time of tender) stating his grounds for failure to meet his obligations.

4.2 ESCALATIONS FOR MATERIALS

The following is a schedule listing basic prices supplied to the Ministry by suppliers. These prices shall be used as a basis for adjustments of any increases in cost of materials irrespective of the tenderer's basic price during the duration of the contract. The successful tenderer shall substantiate such increases with receipted invoices, dated and having the contract number on them. The claim for such escalation shall be made within three (3) months of their being incurred failing of which such claims shall be disallowed.

The Ministry does not accept the contractor's stores requisitions and these cannot be used to claim for price increases.

4.3 NOTE

No material increases shall be paid unless accompanied by the supplier's invoices. No increased labour costs shall be paid unless accompanied certified copies of workers time sheets.

All claims for payment should be certified by the Mechanical Inspector before they are passed to the Mechanical Engineer for processing.

.....
Signature of tenderer

.....
Date & Seal

ESCALATIONS FOR LABOUR

- 5.1 The contractor shall complete a schedule of his labour rates for professional, skilled and unskilled workers. The schedule shall clearly show the number of each category of workers he intends to employ during the contract period.

Such numbers shall be changed with the approval of the engineer from time to time due to fluctuations in workload during the course of the construction period. The contractor shall also clearly show the build up of his worker's wages i.e. he shall stimulate the National Employment Council (NEC) for the Construction Industry of Zimbabwe contributions such as pensions and general funds. The rates so specified shall be the basis for escalations for labour rates, however if no rates are specified the current labour rates stipulated by the NEC shall be applied. No contributions shall be applied to temporary or casual labourers.

5.2 CLASSIFICATION	No. of Workers	Rate (USD per hour)
General hands		
Installation Wireman		
Worker grade 4		
Worker grade 3		
Worker grade 2		
Worker grade 1		
Fitter/electrician		
Worker grade 4		
Worker grade 3		
Worker grade 2		
Worker grade 1		
Foreman/charge hand		
Any other (specify)		

- 5.3 The contractor is required to keep a record of all employees on site. Time sheets showing hours worked and amount paid per hour should be signed by the employees and the clerk of works. The number of hours worked per week by each employee should not exceed forty-four hours unless permission is granted by the Engineer to do so. A copy of the time sheets should be sent to the project Engineer before submitting your claims.

.....
Signature of tenderer

.....
Date & Seal

TENDER SUMMARY

6.1. Cost of all material as specified in **Part 5** USD.....

SERVICES

6.2 Delivery cost USD.....

6.3 Installation cost USD

6.4 Commissioning cost USD.....

6.5 Services Cost USD

6.7 Sub- Total USD

6.8 Add 10% contingency USD

6.9 Total to be carried over to Form of Tender USD

Amount to be carried over to Form of Tender in Words.....
.....
.....

6.10 CONTRACT PERIOD

Tenders shall state herewith the period in days/weeks required to effect delivery of all equipment, installation and commissioning.

- Delivery
- Installation
- Acceptance Testing
- Commissioning
- **Total time required (Contract period)**

6.11 Liquidation and ascertain damages shall be at the rate of 0.05% of contract sum per week

NAME OF TENDERER.....

SIGNATURE..... DATE&SEAL.....

**OPERATING MANUAL, MAINTENANCE MANUAL,
AND AS FITTED DRAWINGS**

7.1 OPERATING & MAINTENANCE MANUALS

The successful tenderer shall provide a minimum of three copies of all operating and maintenance manuals and as fitted drawings to be provided to the client at the time of handover.

7.2 The operating and maintenance manuals shall give full details of the following: -

- (a) A description of the operation of all items of the plant, including any necessary diagrams
- (b) Instructions on how to stop and start the plant and make any adjustments to the operating conditions. Attention should be drawn to any safety precautions and requirements.
- (c) Details of all materials required in the maintenance of the equipment, including any lubricants, replacement filters, etc.
- (d) Schedule of routine and planned preventive maintenance.
- (e) Maintenance checklist.
- (f) Details of each item of plant, including name and address of manufacturer and agent/stockiest, type and serial number and also duty rating.

AIR-CONDITIONING NOTES

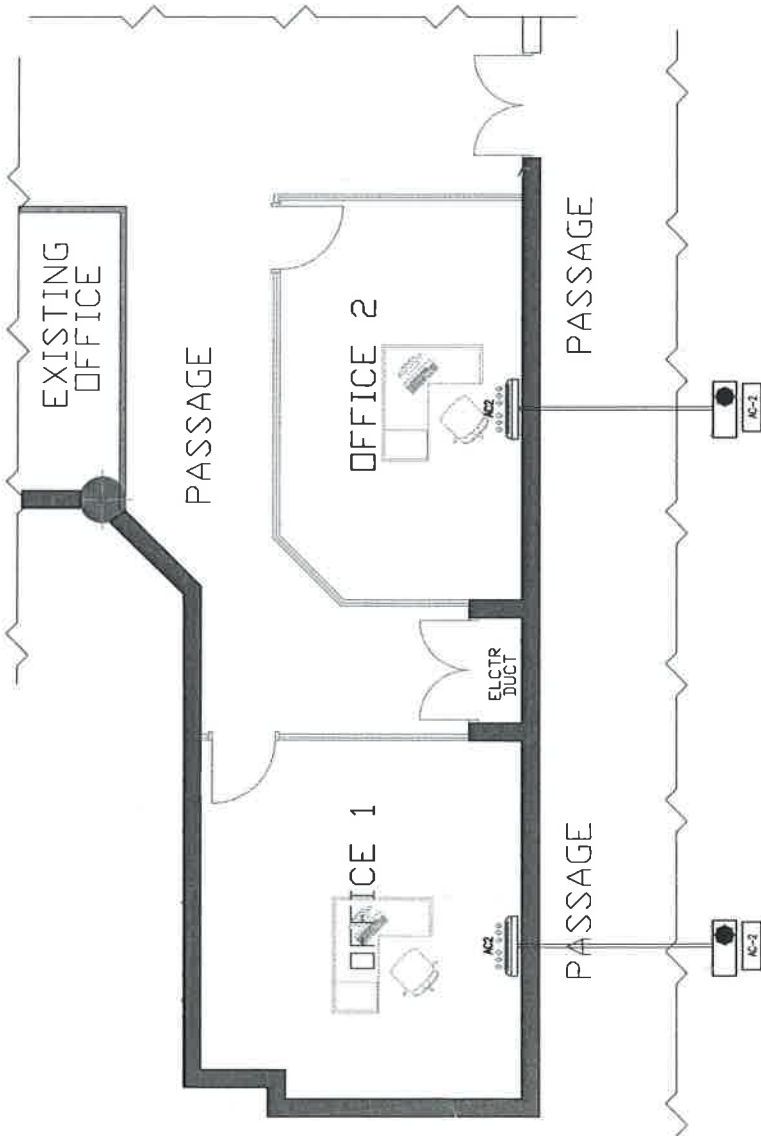
- 1 - ALL UNITS TO BE PRECISE AIR-CONDITIONING UNITS AND TO BE MOUNTED AS INDICATED.
- 2 - THE SPECIALIST AIR-CONDITIONING CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF THE ASSOCIATED CABLING FROM THE AIR-CONDITIONING CONTROL BOARD ON EACH INDIVIDUAL UNIT TO THE NEAREST POWER DISTRIBUTION BOARD.
- 3 - ALL UNITS TO HAVE INDIVIDUAL START CONTROLS.
- 4 - ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCING SETTING OUT OR INSTALLATION.
- 5 - INSTALLATION DRAWINGS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ANY INSTALLATIONS.
- 6 - ANY DISCREPANCIES, ERRORS TO BE SUBMITTED TO THE ENGINEER'S ATTENTION IMMEDIATELY AFTER BEING NOTICED.

KEY

REFRIGERANT PIPING

AIR-CONDITIONING INDOOR WALL MOUNTED SPLIT UNIT

AIR-CONDITIONING OUTDOOR UNIT



FLOOR PLAN LAYOUT

OUTGOING TERMINAL FLOOR PLAN LAYOUT

EQUIPMENT SCHEDULE

AIR CONDITIONING UNITS							
ITEM No.	DESCRIPTION	Total Cool. btu/hr	Total Heat. btu/hr	Power supply V, φ, Hz power input W	Operating Current A	Noise Level dBA ±3	Refrigerant Quantity
AC-2	WALL MOUNTED SPLIT UNIT	24 000	24 000	360,220-240V, 50Hz 4200W	13A	45	R410A 2

Notes		Approved Ltr Date Init		Microfilm Drawn No		MINISTRY OF LOCAL GOVERNMENT AND PUBLIC WORKS P.O. BOX CY441, CAUSEWAY ZIMBABWE		Director Engr: Engr. H. Mungwe		Ministry: MINISTRY OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE		Centre: CHIRUNDU	
						Telephone 790137 / 704078		Scale: M.T.S.		Title: CHIRUNDU BORDER POST COMESA TRADE FACILITATION			
								Designed: B.J. Muzza		Description: AIR CONDITIONING AND VENTILATION			
								Drawn: B.J. Muzza		Date: August 2021			
								Checked: E. Kwasara		Detail:			
								File Ref		Stock Draw No		D.P. No 192687/M 02	

AIR-CONDITIONING NOTES

- 1-ALL UNITS TO BE PRECISE AIR-CONDITIONING UNITS AND TO BE MOUNTED AS INDICATED.
- 2- THE SPECIALIST AIR-CONDITIONING CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF THE ASSOCIATED CABLING FROM THE AIR-CONDITIONING CONTROL BOARD ON EACH INDIVIDUAL UNIT TO THE NEAREST POWER DISTRIBUTION BOARD.
- 3 - ALL UNITS TO HAVE INDIVIDUAL START CONTROLS.
- 4- ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCING SETTING OUT OR INSTALLATION.
- 5- INSTALLATION DRAWINGS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ANY INSTALLATIONS.
- 6- ANY DISCREPANCIES, ERRORS TO BE SUBMITTED TO THE ENGINEER'S ATTENTION IMMEDIATELY AFTER BEING NOTICED.

KEY

REFRIGERANT PIPING

AIR-CONDITIONING INDOOR WALL MOUNTED SPLIT UNIT

AIR-CONDITIONING OUTDOOR UNIT

EXISTING OFFICE 10

OFFICE 7

OFFICE 6

OFFICE 9

OFFICE 8

EXISTING DOUBLE VOLUME OUTGOING TERMINAL HALL

EXISTING OFFICE 3

OFFICE 5

OFFICE 4

EQUIPMENT SCHEDULE

AIR CONDITIONING UNITS									
ITEM No.	DESCRIPTION	Total Heat. Cool. btu/hr	Total Heat. btu/hr	Power supply V,ø-Hz power input W	Operating Current A	Noise Level dBA ±3	Refrigerant	Quantity	
AC-1	WALL MOUNTED SPLIT UNIT	18 000	18 000	1ø,220-240V, 50Hz 2200W	9.8A	45	R410A	4	
AC-2	WALL MOUNTED SPLIT UNIT	24 000	24 000	3ø,220-240V, 50Hz 4200W	13A	45	R410A	2	

OUTGOING TERMINAL FLOOR PLAN LAYOUT

MINISTRY OF
LOCAL GOVERNMENT AND
PUBLIC WORKS
P.O. BOX CY441, CAUSEWAY
ZIMBABWE



Branch Head : D. Takemindias
Designed : B.J. Nguzwa
Drawn : B.J. Nguzwa
Checked : E. Kwasera
Telephone 750137 / 704079

Director Engr. H. Hungwe
Scale : N.T.S.
Date : August 2021
File Ref

Ministry : MINISTRY OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE
Title : CHRINDU BORDER POST COMESA TRADE FACILITATION
Description : AIR CONDITIONING AND VENTILATION
Details :

Ceas : CHRINDU
Project No : 192587/M 01
G.P. No

Notes

ANNEXURE 4 SPECIFICATIONS FOR CCTVs For CHIMUNDA UPGRADE PROJECT

No.	Item	Description	Qty
1	Cameras (Should have 6 megapixels, WDR, wireless capabilities, vandal proof, Night vision cameras, Network Cameras and Day/Night Cameras)	Dome	224
		Fixed Bullet (Outdoor)	18
		Licence Plate Recognition (Outdoor)	10
		PTZ (Speed Dome)	68
2	Surveillance Monitor	*85 Inch Surveillance Monitors (no television sets) with HDMI ports and cables	5
	Camera licenses		320
	Camera Software	*to be intergrated with cathexis software.	1
	Razor Wire		300m
3	Full set Desktop Computer	coi7 processor , Windows 10 OS, 8 Gig RAM, 1 TB HDD	1
4	Network Video Recorder	*Operating System – Embedded Linux	4*128 channel
		* Communication Interface - 1 RJ45 network port); 1 RS232(DB9); 1 RS485	
		*Audio Output – HDMI	
		Display Resolution - 3840×2160/1920×1080/1280×1024/1280×720/1024×768	
		*128 channel	
		*Raid 5 *Hot swappable hard drives *10 terabyte X 8 Hard drives	
5	CCTV Mounting poles	*70mm galvanized *sealed top height	*6m 21
6	Access Control	Biometric Access Control	4
		Boom Gates (Electronic gates)	2

MINISTRY OF FOREIGN AFFAIRS AND
INTERNATIONAL TRADE
PROCUREMENT MANAGEMENT UNIT
05 MAY 2022
P.O. BOX 4240, HARARE
ZIMBABWE

7	Uninterrupted Power Supply (UPS)	UPS 650 va tower light 650 kva	3
		UPS 3kva	18
		UPS 5kva	1
0	24 port POE Switches	1U size	10
		10/100/1000 Ethernet Ports: 24	
		Uplink Interfaces: 4 by 1 Gigabit SFP with modules	
		120 by 3metre LC-to-ST fiber patch cables	
		Must support VLANs	
		Manageable at layer 3	
		Vendor support for the switches	
		Support for SNMP v2c/v3	
		Cabinet mountable (should include brackets)	
		Remote management via telnet, ssh, http and https	
		Local console management (Include console cable)	
	8 port POE Switches	10/100/1000 Ethernet Ports: 8	12
		1U size	
		Support for SNMP v2c/v3	
		Vendor support for the switches	
		Uplink Interfaces: 1 Gigabit SFP with module	

		Must support VLANs	
		Manageable at layer 3	
		10/100/1000 Ethernet Ports: 16	
		1U size	
		Support for SNMP v2c/v3	
	16 port POE Switches	Vendor support for the switches	8
		Uplink Interfaces: 1 Gigabit SFP with module	
		Must support VLANs	
		Manageable at layer 3+C36:C44C3C38:C44	
	Wall Mountable poles with mounting kits	Steal Poles	30
	Cabinet Trays		20
	Splice Protectors		20
	Cable Ties	Pack of 100	7
	Network Cabinet Roll Bolts		40
	st Mid Couplers		40
	st Pigtaills		40
	Compression Glands		20
	S6 Fisher Plugs	Pack of 100	3
	Cage Nuts	Pack of 100	1

	RJ45	Pack of 100	4
	Media Converter	Multimode	20
	Fiber Patch Panel		20
	Screws	Pack of 100	4
	16x25 Trunking Pipes		70
	40x40 Trunking Pipes		50
	Back box		160
	Face plates		160
	Cement		
	Concrete Stones		
	River Sand		
	Conduits		200
	Fiber		800m
	Horse Clamps	>150	200
	Cat 6 Indoor UTP Cable	500m Drum	10
	Radio Link	Frequency 2.4GHz/5GHz	15
	Cat 6 Outdoor UTP Cable	500m Drum	20
	Network Cabinet	9U Indoor	10
		9U Weather proof	12

	47 U Server room	1
Recommendations		
Cables	2,5mm 3 core pvc cable	300
	4mm 3 core swa cable	300
socket outlets	13A Single socket outlet	20
	13A Double socket outlet	10
	6x3 pvc surface box	10
	3x3 pvc surface box	20
	size 0 pvc glands	60
	surge protector adaptor 4 way	4
	20A MCB single pole	12
	13A Plug Top	20
Cabinet	UPS Outdoor cabinet (waterproof)	12
Glands	Size 1 steel glands with shroud	20

ANNEXURE 5

TENDER GUARANTEE FORM

Specimen tender guarantee

To be completed on paper bearing the letterhead of the financial institution
For the attention of <address of the contracting authority> referred to below as the
'contracting authority'

<Date>

Title of contract: <Title of contract>

Identification number: <Publication reference>

We, the undersigned, <name and address of financial institution>, hereby irrevocably declare that we will guarantee as primary obligor, and not merely as a surety on behalf of <tenderer's name and address> the payment to the contracting authority of <amount of the tender guarantee>, this amount representing the guarantee referred to in article 11 of the contract notice.

Payment shall be made without objection or legal proceedings of any kind, upon receipt of your first written claim (sent by registered letter with confirmation of receipt) if the tenderer does not fulfil all obligations stated in its tender. We shall not delay the payment, nor shall we oppose it for any reason whatsoever. We shall not under any circumstances benefit from the defences of the security. We shall inform you in writing as soon as payment has been made.

We note that the guarantee will be released at the latest within 45 days of the expiry of the tender validity period, including any extensions, in accordance with Article 8 of the Instructions to tenderers[and in any case at the latest on (1 year after the deadline for submission of tenders)]¹.

The law applicable to this guarantee shall be that of:<the country in which the financial institution issuing the guarantee is established>]. Any dispute arising out of or in connection with this guarantee shall be referred to the courts of <the country in which the financial institution issuing the guarantee is established>].

The guarantee will enter into force and take effect from the submission deadline of the tender.

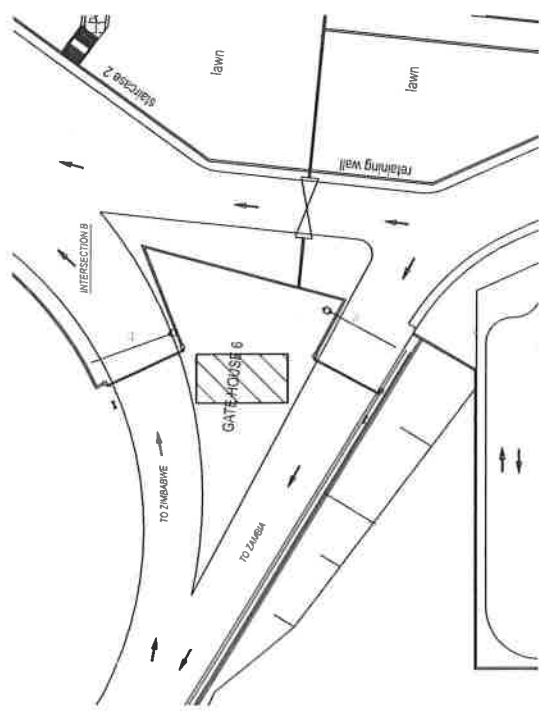
Name: Position:

Signature: Date:

¹ This mention has to be inserted only where required, for example where the law applicable to the guarantee imposes a precise expiry date or where the guarantor can justify that he is unable to provide such a guarantee without expiry date.

Specifications fo electronically cintrolled gates

Parameters	P3.07-Q	P4.0-Q	P5.0-Q	P8.0-QE	P6.6-D	P8-D	P10-D	E8P	E10P	
Indoor / Outdoor	Outdoor									
Pixel LED	SMD1515	SMD1921	SMD2727	SMD3535	DIP3in1 (570)					
Module size (mm)	320*160								320*320	
Module Resolution (Dots)	104*52	80*40	64*32	40*20	48*24	40*20	32*16	40*20	32*32	
Module Weight	450g	450g	450g	480g	1100g	850g	670g	2500g	2350g	
Power per module Watt	42	42	34	35	45	43	40	77	84	
Power max / sqm	820	820	664	684	879	840	765	700	750	
Driving scanning Method	1/10	1/10	1/8	1/5	1/6	1/5	1/4	1/5	1/4	
Pixel Density / sqm	106100	62500	40000	15625	22500	15825	10000	15825	10000	
Cabinet sizes (Alum)	960 x 960 Magnesium Alloy								Open frame	
IP rating	IP65								IP65/65	
Weight / sqm (estimate)	35					Max 40			35	
Service (Front or Back)	Back								Front and Back	
Min View Distance	>3m	>4m	>5m	>8m	>7m	>8m	>10m	>8m	>10m	
Brightness	>4500	>5500				>8000				
Refresh Rate	1920									
Frame Frequency	60									
Colours	4398 Billion									
Grey Grade	14-16									
Operating Temperature	-20-40℃									
Working Humidity	10%-65%									
Communication Distance	Cat 5 < 70meters, Fiber > 70 meters									
Input Signal	YPbPr, S-Video, VGA, HDMI, SDI, DVI									
Life Span	100 000 hours									
Control System	Novastar, Brightsign, Y10 / TB6 (Lan, Wifi, 3G, SD)									



SMART GATE SYSTEMS SPECIFICATIONS

The system is to provide automated 24-hour access to border sites by entering the relevant vehicle's number plate into the system. When pre-approved vehicles turn up, the barrier will open allowing free-flowing vehicle access in and out for pre-approved (cleared) vehicles. Access can equally be removed or revoked at any time from the control room.

The automated smart gate system to include hardware systems (and operating software systems) to ensure the basic operation of all products. In addition, arriving and departing processed/cleared vehicle docking configurations are added, which greatly increases the intelligence of the entire system. This category include:

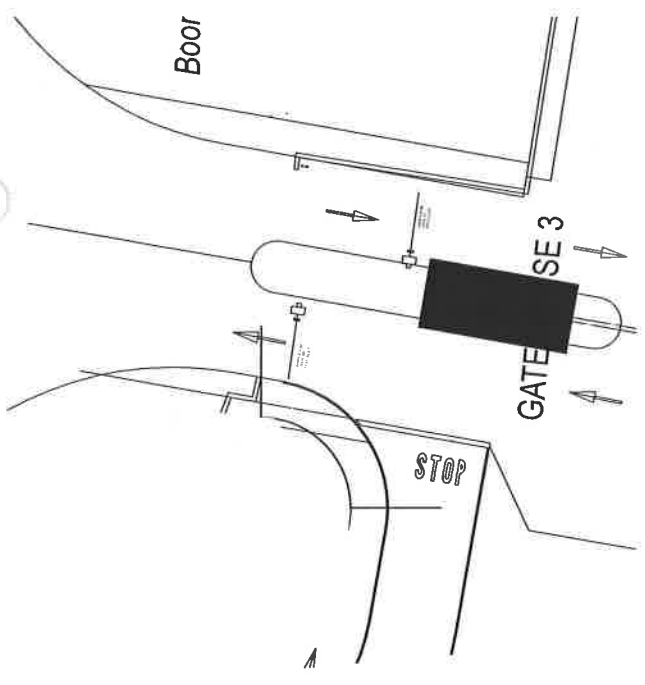
1. INTELLIGENT LICENSE PLATE RECOGNITION SYSTEM.

Automatic number plate recognition access control, License plate recognition system character:

- Can identify vehicle license text and figures.
- Can identify one line and two lines license plate number.
- Can recognize 0-4 letters and numbers 1 to 9 for the license plate number
- Can identify English of license plate number.
- The database can store the capture image, license plate number, lane number and the time of vehicle through record.
- License plate number entrance and exit record can report output.
- Support English and other language customizable.

2. AUTOMATIC RISING KERBS OR RISING BLOCKERS:

- It should be ideal for preventing unwanted vehicle access.
- Security road blockers to provide higher levels of security
- with built in stopping power.
- rising kerbs to provide a simple solution and additional security to border where vandalism is a risk or uncleared vehicles from escaping.
- Rising kerb width to be between max. 2 metres and min. 0.5 metres heights levels.
- to be fully automatic rising kerb utilises the latest trusted hydraulic technology ensuring that due to the high quality components they have a long durable life requiring the minimum recommended maintenance.
- 100% duty rating and designed for continuous and frequent use.
- An instantly reversible industrial hydraulic pump drive unit with motor protection and switched fused supply supplied.
- The power required, supplied from a three phase 400V power supply as standard. Manufactured from welded rectangular hollow section frame and a chequered top plate to complement the rising kerb system.
- Grade A concrete is required for mounting to structural engineer approval.



The Automatic number plate recognition access control system consists of the following elements:

- A high-definition infrared digital camera that illuminates and captures an image of the vehicle's number plate. Some ANPR cameras can even take images at the speed of up to 240km/h.
- Computer server with software to process the information.
- Wi-Fi, Ethernet or any other forms of the high-speed data network to transmit the vehicle's number to computer software for identifying and verifying an approaching vehicle.
- System be able to capture incoming traffic number plates and log them into the database.
- A database of employee's and authorised individuals' number plates or pre approved number plates list.
- Automated Barriers, raising kerb as a physical barrier for entering the border.
- Automated Boom gate
- Access controller connected to all of the above

Notes				MINISTRY OF LOCAL GOVERNMENT AND PUBLIC WORKS P.O. BOX CY441, CAUSEWAY ZIMBABWE		MINISTRY OF FOREIGN AFFAIRS AND INTERNATIONAL TRADE CHIRUNDU BORDER POST COMESA TRADE FACILITATION		CHIRUNDU	
AUTHORITY Lib. Name: _____ Ref: _____		Branch Head: G. Gwendure Designed: M. Dube Drawn: M. Dube Checked: L.T. Mugore		Director Arch. Arch. P.S. Makura Status: As Shown Date: August 2021		Military: _____ Title: _____ Description: _____ Details: _____		S.P. No: _____ Project No: _____	
Microfilm Draw No: _____		Telephone 790137/794079		Stock Draw No: _____		S.P. No: _____ Project No: _____		S.P. No: _____ Project No: _____	