### RURAL ELECTRIFICATION FUND



### **BIDDING DOCUMENT**

#### for the

Supply and delivery of various Cables

Tender Closing Date: 10 June 2022, Time: 1000 hrs

Date of tender advert: 12 May 2022

TENDER NUMBER: REF/DOM/14/05/2022

**Type of tender: Domestic Competitive Tender** 

# RURAL ELECTRIFICATION FUND



<u>DECLARATION BY THE ACCOUNTING OFFICER IN TERMS OF SECTION 19(2)(C) OF THE PUBLIC PROCUREMENT AND DISPOSAL OF PUBLIC ASSETS REGULATIONS, 2018.</u>

TENDER NUMBER: REF/DOM/14/05/2022

TENDER DESCRIPTION-SUPPLY AND DELIVERY OF CONDUCTOR CABLES

#### **DECLARATION**

The procurement for the tendered goods/items is based on neutral and fair technical requirements and bidder qualifications.

# J.V MASHAMBA CHIEF EXECUTIVE OFFICER

**Standard Bidding Document for the Procurement of the following Conductor cables:** 

### BIDDING DOCUMENT FOR THE PROCUREMENT OF VARIOUS CONDUCTOR CABLES .

### **Summary of requirements**

Lot no	DESCRIPTION	QTY
1	Conductor Cable 32mm HDC Bare	40,000m
2	Conductor ACSR Magpie 10mm	122,100
3	16mm 4 Core/PVC/SWA	15,0000
4	16mm 2core/PVC/SWA	1,000
5	35mm 3 Core PVC/SWA	140
6	35mm 4 Core PVC/SWA	6,000
7	70mm 4 Core PVC/SWA	900
8	Cable XPLE 35mm x 1 Core FR	3108
9	Cable XPLE 16mm x 1 Core FR	1392

### BIDDING DOCUMENT FOR THE PROCUREMENT OF VARIOUS CONDUCTOR CABLES .

#### **Table of Contents**

**Part 1: Bidding Procedures** 

**Part 2: Statement of Requirements** 

**Part 3: Contract** 

PART 3 CONTRACT

#### PART 1: BIDDING PROCEDURES

#### **References:**

References to the Act are to the Public Procurement and Disposal of Public Assets Act [Chapter22:23] and references to the Regulations are to the Public Procurement and Disposal of Public Assets (General) Regulations (Statutory Instrument No. 5 of 2018). The terms and requirements in the Act and Regulations govern the submission of Bids and should be read by all Bidders. The evaluation of this tender shall be guided by requirements of the Act.

#### **Table of tender requirements**

Lot no	DESCRIPTION	QTY
1	Conductor Cable 32mm HDC Bare	71,862m
2	Conductor ACSR Magpie 10mm	122,100
3	16mm 4 Core/PVC/SWA	15,0000
4	16mm 2core/PVC/SWA	1,000
5	35mm 3 Core PVC/SWA	140
6	35mm 4 Core PVC/SWA	6,000
7	70mm 4 Core PVC/SWA	900
8	Cable XPLE 35mm x 1 Core FR	3108
9	Cable XPLE 16mm x 1 Core FR	1392

#### **Preparation of Bids**

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

- 1. the Bid Submission Sheet in this Part;
- 2. the Statement of Requirements in Part 2;
- 3. a copy of every document necessary to demonstrate eligibility in terms of section 28 (1) of the Regulations;
- 4. Supplier Registration number showing that you are registered with the Procurement Regulatory Authority of Zimbabwe(PRAZ);
- 5. A bid security or bid securing declaration in the format specified in this Part;
- 6. A copy of:
  - Company profile
  - Certificate of incorporation/proof of company registration in the country of origin
  - Tax clearance certificate/proof of tax compliance
  - CR 14(Proof of company ownership)
  - *ISO* certificate for the manufacturer
  - *Letter of agency from the manufacturer(for non-manufacturers)*
  - Two Reference letters

#### PART 3 CONTRACT

You are advised to carefully read the complete Bidding Document, as well as the General Conditions of Contract which are available on the Authority's website, before preparing your Bid. Part 3: Contract is provided not for completion at this stage but to enable Bidders to note the Contract terms they will enter into if their Bid is successful.

The standard forms in this document may be retyped for completion but the Bidder is responsible for their accurate reproduction. All pages of the Bid should be clearly marked with the Procurement Reference Number above and the Bidder's name and any reference number.

#### **Lots and Packages**

The tender is divided into lots. Bidders may bid for one or all the Lots

#### Number of bids allowed

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

#### Clarification

All queries regarding the tender shall be forwarded by the bidder in writing on duly signed company letterhead and emailed on the following three(3) email addresses: <a href="kchinembiri@rea.co.zw">kchinembiri@rea.co.zw</a>; <a href="tshumba@rea.co.zw">tshumba@rea.co.zw</a> and buyer1@rea.co.zw , not less than five(5) working days from the closing date of the tender. Ensure the quiry is emailed to ALL the three email addresses without fail. Clarifications/Responses pertaining to the queries received shall uploaded on REF website address www.rea.co.zw on the notice board page. It shall be the responsibility of bidders to continuously check the website for such clarifications/quiry responses.

If a prospective tenderer sends a query less than the stated days above, the query may not be responded. Any neglect, delay or failure on the part of the Tenderer to obtain additional information on the above or any other matters, which the tenderer considers necessary, shall not relieve him/her from responsibility as a Tenderer. Only bidders facing challenges in receiving responses to their quiries may call the Procurement Administrator on 0719 409 691.

#### **Pre-bid meeting**

No pre-bid meeting shall be held in this tender.

#### Validity of Bids

The minimum period for which the Bidder's bid must remain valid is sixty (60) days from the deadline for the submission of bids.

#### **Submission of Bids**

Bids must be submitted in writing in a sealed envelope to the address below, no later than the date and time of the deadline below. It is the Bidder's responsibility to ensure that they

#### PART 3 CONTRACT

receive a receipt confirming submission of their bid that has correct details of the Bidder and the number of the Bid.

The Bidder must mark the envelope with the Bidder's name and address and the Procurement Reference Number.

Bidders must submit three bid documents. The bidder must clearly mark the original copy "ORIGINAL.". Two other copies must be clearly marked "COPY." In the event of any discrepancy between the original and the copies, the original will prevail.

Late bids will be rejected. The Procuring Entity reserves the right to extend the bid submission deadline but will notify all potential bidders who have collected the bidding documents of the amended bid submission deadline.

Submission address:

**Chief Executive Officer** 

**Rural Electrification Fund** 

**Megawatt House** 

44 Samora Machel Avenue

Harare

Means acceptance:

Tenders must be enclosed in sealed envelopes and endorsed on the outside with the advertised tender number—the description and

outside with the advertised tender number, the description and closing date. The bids shall be dropped in the tender box located at the above stated address by the closing date and time personally or by post. Upon bid submission, bidders must obtain a bid submission receipt as proof of bid acceptance. Bidders are free to witness the opening of the tenders on the named closing date and time.

#### **Bid opening**

Bidders and their representatives may witness the opening of bids, which will take place at the submission address immediately following the deadline.

#### Withdrawal, amendment or modification of Bids

A Bidder may withdraw, substitute, or modify its Bid after it has been submitted by sending a written notice, duly signed by an authorized representative. However, no Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the expiration of the period of Bid validity specified by the Bidder or any extension of that period.

#### **Bid Prices and Discounts**

The prices and discounts quoted by the Bidder in the Bid Submission Form and in the Price Schedules must conform to the requirements specified below.

#### PART 3 CONTRACT

Prices must be quoted as specified in the Price Schedule included in Part 2 Statement of Requirements. In quoting prices, the Bidder is free to use transportation through carriers registered in any eligible country and similarly may obtain insurance services from any eligible country. Prices quoted must include the following costs and components:

(i) the price must be quoted DDP(2020) that is inclusive of freight costs, insurance costs(risk), import duties and taxes till delivery.

#### Payment of tender fees

All foreign bidders are expected to pay for any fees or the bid bond in the currency of their bids while local bidders shall pay in local currency only.

#### **Bid Security**

Every bidder is required to include bid security as follows:

#### **Bid Bond/Security**

The Bid bond for this tender shall be **RTGS\$300,000.00**(local bidders) and payable using the following options (S.I 5 of 2018 section 26). Please note that foreign bidders must provide the bid bond of equivalent value in the currency of their bid.

#### Option 1

A certified bank cheque; or

#### Option 2

A bank guarantee; or

#### Option 3

A cash deposit to Procurement Regulatory Authority of Zimbabwe (PRAZ)

NB: If Option 3 is chosen please note that the Tenderer must pay a non-refundable Bid Bond/Bid security establishment fee equivalent to ZW\$28,000.00 (local bidders) and USD350.00 (Foreign bidders) to the Procurement Regulatory Authority of Zimbabwe in line with S.I. 299 of 2021 PART V item 4.

Any bid not accompanied by a Bid Security or Bid Securing Declaration, where this is a requirement of bidding, will be rejected by the Procuring Entity as non-responsive.

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

#### **Contract Administration Fees**

The winning bidder(s) may be required to pay applicable contract administration fees to PRAZ in terms of part VI of Statutory Instrument (S.I) 299 of 2021 before contract signature. It shall be the duty of bidders to study the relevant fees schedule on the S.I.

PART 3 CONTRACT

#### **Evaluation of Bids**

Bids will be evaluated using the following methodology:

- 1. Preliminary examination to confirm that all documents required have been provided, to confirm the eligibility of Bidders in terms of section 28 (1) of the Regulations and to confirm that the Bid is administratively compliant in terms of section 28 (2) of the Regulations.
- 2. Technical evaluation to determine substantial responsiveness to the specifications in the Statement of Requirements;
- 3. Financial evaluation and comparison to determine the evaluated price of bids and to determine the lowest evaluated bid.

Bids shall be fully evaluated for all the stages and bids failing on any stage shall be rejected.

#### **Evaluation criteria**

The Procuring Entity's evaluation of a Bid will take into account, in addition to the Bid Price, the following criteria and methodologies.

- (a) Compliance to technical specifications-Bidders must fully comply with the technical specifications provided in this tender. Bidders must fully and correctly complete the technical guarantee schedule provided in the technical specifications chapter of this Bidding Document per lot.
- (b) Price and pricing format-Bidders should submit their bid prices with the following format:

Lot no	Description	QTY	Price per meter USD\$ EXCL VAT	VAT 14.5%	Total Price USD VAT INCL	Price per metre ZW\$ VAT INCL
1	Conductor Cable 32mm HDC Bare	71,000m				
2	XXXXXXXXXXX	Xx				
3	xxxxxxxxxxx	Xx				

Bidders are free to quote for one or more lots

#### **IMPORTANT PRICING NOTES**

- Dual pricing in terms of Statutory Instrument (S.I) 185 of 2020-Bidders must quote their bid prices both in USD and the RTGS currency using the prevailing exchange rate. Bidders must state the exchange rate used.
- Payment shall be strictly in local currency at the prevailing exchange rate using the RBZ exchange rate(mid-rate). See http://www.rbz.co.zw/.

The prevailing RBZ exchange rate(mid-rate) on the date of tender closing shall shall be used as the base rate where necessary.

- The bid price should clearly and separately show the unit price and the total price.
- The USD prices shall be used for purposes of tender evaluation and tender
- Bidders MUST state clearly whether they charge VAT or not.
- (c) Should REF received bids in different currencies ,the currency of evaluation will be the USD\$. See pricing format provided. Where necessary,REF shall convert the bids into USD currency using the RBZ exchange rate (mid-rate) obtaining on the 01 June 2022. See http://www.rbz.co.zw/.
- (d) **Delivery schedule**: The Conductor 32mm HDC Bare and Conductor ACSR Magpie 10mm (LOT 1 and 2 respectively) shall be delivered over a period of six(6) weeks from the date of contract signing. However the other cables shall be delivered within a period 5 days from the date of contract award(ex stock). The delivery address for the tender shall be:

#### PART 3 CONTRACT

- REF Central Stores No.22A James Martin Road, Lochinvar Harare Zimbabwe. REF reserves the right to reject any deliveries or products that do not meet the technical specifications provided in this tender.
- **(e)** Domestic preference- Local manufacturers shall be accorded a 15% preference over foreign manufacturers **on Lot 1 and 2 only.** This is in terms of Section 8 of the PPDPA Regulations(2018). Only local bidders who attach ISO/SAZ certification as manufacturers of the conductor cable shall qualify for the domestic preference rule.
- **(f) ISO or SAZ certification-** Bidders interested in Lot 1 and 2 MUST attach ISO/SAZ Certification in the name of the bidder only, while bidders interested in the remaining Lots must attach ISO or SAZ certification for the manufacturer of the cables.
- (G) Payment terms-Bidders must state the preferred payment terms

However REF shall pay the winning bidder (local or foreign bidder) in local currency(ZW\$) only. REF favors payment after delivery, however where a bidder require pre-delivery payment they must state ability to secure a bank guarantee from a registered commercial bank acceptable to REF equal to the amount to be advanced. The bank guarantee must be provided within two weeks of contract signing.

### NOTE: Foreign bidders must provide a bank guarantee confirmed by any local commercial banks or provide a bank guarantee issued by any local banks.

- (h) Bidders must state whether the goods shall be imported or are locally manufactured without fail. Bidders must state the country of origin without fail.
- (i) Bidders should provide their local bank account details without fail.
- (j) Delivery term shall be Delivered Duty Paid(**DDP**)(2020), Harare Central Stores-That is Inclusive of freight costs, transit insurance (risk), all import duties and costs until delivery at REF Central Stores No.22A James Martin Road, Lochinvar Harare Zimbabwe.-Bidders MUST state that the delivery term shall be **DDP**(2020) Central Stores No.22A James Martin Road, Lochinvar Harare Zimbabwe.
  - (k). REF may require that the Conductor cables be tested by the Standard Association of Zimbabwe(SAZ) before delivery. The supplier shall bear the expenses in that case.
- (l) Bidders must be registered with the Procurement Regulatory Authority of Zimbabwe(PRAZ)- Bidders must attach proof of registration with PRAZ on the list for supply of electricals/hardware. However foreign bidders shall only be required to register with PRAZ if awarded the tender and before contract signature.
- (m) Letter of agency-non-manufacturers/importers must attach a letter of agency from the manufacturer with the bid documents without fail. However LOT 1 and 2 are reserved for local manufacturers only.
- (n) Foreign bidders must clearly state in their bids that they have checked that the goods tendered "fall" or "do not fall" under the Consignment Based Conformity Assessment (CBCA) programme as required by the Government of Zimbabwe. If the goods tendered "fall" under the CBCA programme, bidders must further state that all costs associated with this requirement will be to the supplier's account.
  - (o). Delivery period. Bidders must state that they have capacity to deliver the conductor cables as stated on clause (d) above.
  - (p) Reference letters-Bidders must attach at least two reference letters from companies where the bidder has supplied Conductor cables over the past two years. Reference letters referring to supplies done more than two years old will not be acceptable.
  - (q) Bidders must state a warranty period of 12 months for the supplied items.

#### PART 3 CONTRACT

- (r) Bid bond compliance-Bidders must attach proof of bid bod compliance as per Part one of this bidding document without fail.
- (s) Bid validity of a minimum of 60 days is required and must be clearly stated.
- (t) The Bidders must submit the bid with a duly filled in and signed Declaration On Non-Engagement in Corrupt or Fraudulent Practices Form Annexure 2.
- (u) The bidder must submit with the bid a duly filled in and signed attached Form of Tender Annexure 3.
- (v) Attach the bid submission form attached on page 13 of this document. Bids without the bid submission form may be rejected.

#### **Eligibility and Qualification Criteria**

Bidders are required to meet the criteria in section 28 of the Act to be eligible to participate in public procurement and to be qualified for the proposed contract. To be eligible, Bidders must:

- 1. have the legal capacity to enter into a contract;
- 2. not be insolvent, in receivership, bankrupt or being wound up, not have had business activities suspended and not be the subject of legal proceedings for any of these circumstances;
- 3. not have a conflict of interest in relation to this procurement requirement;
- 4. not been debarred from participation in public procurement under section 72 (6) of the Act and section 74(1) (c), (d) or (e) of the Regulations or declared ineligible under section 99 of the Act:
- 5. have the nationality of an eligible country as specified in the Special Conditions of Contract: and

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

#### **Origin of Goods**

All goods and related services must have as their country of origin an eligible country, as specified in the Special Conditions of Contract.

#### **Technical Criteria**

The Technical Specifications Sheet details the minimum specification of the goods required. The goods offered must meet this specification, but no credit will be given for exceeding the specification.

#### **Currency**

Should REF received bids in different currencies ,the currency of evaluation will be the local currency(ZW\$) . NOTE: Local bidders must quote in local currency only.

PART 3 CONTRACT

#### **Award of Tender Criteria**

Tender shall be awarded to the lowest priced bidder to specification for Lot 1 and 2. The other Lots shall be awarded to the lowest priced bidder to specification who holds the items ex stock only.

The proposed award of contract will be by issue of a Notification of Contract Award in terms of section 55 of the Act which will be effective until signature of the contract documents in accordance with Part 3: Contract. Unsuccessful Bidders will receive the Notification of Contract Award and, if they consider they have suffered prejudice from the process, they may within 14 days of receiving this Notification, submit to the Procuring Entity a Challenge in terms of section 73 of the Act, subject to payment of the applicable fee set out in section 44 of and the Third Schedule to the Regulations.

#### Right to Reject

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

#### **Corrupt Practices**

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

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

#### **Bid Submission Sheet**

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

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

PART 3

CONTRACT Procurement Reference Number:

,	Subject of Pro	ocurement:		
]	Name of Bido	ler:		
]	Bidder's Refe	erence Number:		
]	Date of Bid:			
in	ndicated on tl	apply the items listed in the attache the attached Price Schedule and in Bidding Document referenced above	accordan	1 1
W	Ve confirm th	at we meet the eligibility criteria sp	ecified in	Part 1: Procedures of Bidding.
	Ve declare than the correct.	at we are not debarred from bidding	g and that	the documents we submit are true
T	he validity pe	eriod of our bid is: {days} fi	rom the da	ate of submission.
d١		at the prices quoted in the attached validity period and will not be subject by:		
	Signature		Name:	
	Position:		Date:	(DD/MM/YY)
	Authorised	for and on behalf of:		
	Company		• • • • • • • • • • • • • • • • • • • •	
	Address:			

## TECHNICAL SPECIFICATIONS FOR THE CABLES.

#### **INSTRUCTIONS TO BIDDERS**

Bidders must study the instructions provided in the table below. NB: Bidders who fail to comply with these instructions shall be disqualified.

Lot no	DESCRIPTION	QTY	INSTRUCTIONS TO
			BIDDERS
1	Conductor Cable 32mm HDC	71,862m	Technical specifications attached.
	Bare		Bidders must complete the
2	Conductor ACSR Magpie 10mm	122,100	technical guarantee schedule
3	16mm 4 Core/PVC/SWA	15,0000	without fail.
4	16mm 2core/PVC/SWA	1,000	
5	35mm 3 Core PVC/SWA	140	
6	35mm 4 Core PVC/SWA	6,000	
7	70mm 4 Core PVC/SWA	900	
8	Cable XPLE 35mm x 1 Core FR	3108	Sample available for viewing by
9	Cable XPLE 16mm x 1 Core FR	1392	bidders at REF Central Stores.
			Bidders must inspect the sample
			and provide a bid price.

### REA SPECIFICATION FOR 32 mm2 BARE HARD DRAWN COPPER CABLE

#### INTRODUCTION

1.0 This Specification covers the details of the hard drawn copper cable for earthing on low voltage and high voltage lines and substations.

#### 2.0 PARTICULARS OF ELECTRICAL SYSTEM

The cables shall be suitable for use on the following electrical system.

- a) outdoor, 3-phase
- b) Operated at 50 Hz variable between plus or minus 2.5%
- c) Directly Earthed

#### PART 3 CONTRACT

- d) Load currents up to 280 amps for 100 mm square HDA.
- e) Faults currents up to 25kA

#### STANDARDS, UNITS AND LANGUAGE

All cables and cables supplied under this specification shall conform to the following standards (latest edition and any amendments):

- a) BS 215
- b) IEC 207
- c) IEC 1089
- d) IEC 889
- e) Any other standard provided the Tenderer can provide documentary evidence that the standard is equal to or better than the above standards.

All tenderer's correspondence and all descriptions upon drawings, illustrations or instructions shall be in the English language.

SI units of measurements shall be used throughout. The cable shall be manufactured to high quality standards. The companies manufacturing the cables shall have ISO 9001 Certification and shall submit documentary proof thereof.

#### 3.0. MECHANICAL AND ELECTRICAL CHARACTERISTICS

The required electrical and mechanical characteristics of copper cable are as shown on table below.

Item	Description	Unit	Requirement
1	Size	mm2	32
2	Overall Diameter	mm	7.23
3	Stranding		7/2.41
4	Mass/Weight per km	kg/km	283.87
5	(Maximum) DC	Ω/km	0.56

PART 3	CONTRACT

Resistance at 20°C	

#### 4.0 TESTS

The samples of individual wires for the tests shall normally be taken before stranding.

The manufacturer shall carry out test on samples taken out at least from 10% of copper wire spools. The wires used for all copper cables shall comply with the following tests.

- a) Breaking load test
- b) Wrapping test
- c) Resistance test

#### 5.0 PACKING AND MARKING

#### 5.1 CABLE DRUMS

The cable shall be supplied and delivered on drums. The flanges and barrels of the drums shall be made entirely of a suitable and seasoned wood, which shall be treated. If hardwood is used, it shall not form more than 40% of the total weight of wood making up the drum, neither shall it be, used on the inside of the flanges and barrels, so that it shall not be in contact with the cable. Spindle holes shall not be less than 60mm in diameter. The surrounding of the holes shall be suitably reinforced.

The flanges and barrel shall be free from protruding material capable of damaging the cable or the hands of the operator during rotation of the drum.

#### 5.2 PACKING

The surface of the barrel and the inside of the flanges shall be lined with waterproof paper.

The loose end of the cable shall be firmly stapled to the inside of the flanges.

#### PART 3 CONTRACT

The drum number shall brand or gauged into the outside of one of the flanges. An arrow shall indicate the direction in which the drum shall be rolled. A label showing size, type and length of cable shall be firmly secured to the outside of one of the flanges. The label shall be suitably weatherproofed.

Where battens are not used on the circumference of the flanges, the circumference of the cable shall be well protected by hessian or similar to prevent damage to the outer layers of the cable.

The gross mass for the cable and drum shall not exceed 500kg.

The minimum acceptable cable length shall be 1km. Longer cable lengths are preferred as long they meet the above condition for gross mass.

#### 6.0 Technical Guarantee Schedule

- a) The Technical schedule shall be filled in and completed by the Bidder, and submitted with the Bid.
- b) All documentation necessary to evaluate whether the equipment offered is accordance with this Specification shall be submitted with the Bid.
- c) All data entered in the schedules of Technical Guarantees are guaranteed values by the Bidder and cannot be departed from whatsoever.
- d) The Bidder also guarantees all data entered in the schedules of informative Data. These data may only be altered following the Engineer's written consent.

#### Technical Guarantee Schedule: 32 mm<sup>2</sup> Bare Hard Drawn Copper Cable

Item	Description	Unit	Guaranteed
1	Size	mm2	
2	Approximate Overall Diameter	mm	
3	Stranding	mm	
4	Mass/Weight per km	kg/km	
5	Gross Mass (Drum and cable)	kg	
6	(Maximum) DC Resistance at 20°C	ohms	

#### PART 3 CONTRACT

7	Is Quality Test Certificate Provided?	Y/N	
8	Manufacturer Quality Standard of Certification		
9	Manufacturer		
10	Country of manufacture		

REA SPECIFICATION No.41008/1997.

#### SPECIFICATION FOR.-ALUMINIUM CONDUCTOR STEEL REINFORCED

#### 1. INTRODUCTION

This Specification covers the details of the Aluminium Conductor Steel Reinforced for use on overhead lines. The sizes of conductors standardised for lines are indicated below:

ACSI	ACSR Conductors				
Ite	Code name	Nominal			
m		Size mm sq.			
1	<mark>Magpie</mark>	10			
2	Gopher	25			
3	Rabbit	50			
4	Raccoon	75			
5	Dog	100			
6	Wolf	150			
7	Lynx	175			
8	Panther	200			

PART 3 CONTRACT

#### 5 STANDARDS, UNITS AND LANGUAGE

All conductors supplied under this specification shall conform to the following standards (latest edition and amendments):

- a) BS 215
- **b)** IEC 207
- c) IEC 1089
- d) Any other standard provided the tenderer can provide documentary evidence that the standard is equal to or better than the above standards.

SI units of measurements shall be used throughout. The conductors shall be manufactured to high quality standards. The companies manufacturing the Conductors shall have ISO 9001 or 2 certification. Documentary proof of ISO Certification shall be provided with the bid.

#### 6 CONSTRUCTION

Aluminium Conductor Steel Reinforced shall be in accordance - with BS 215: part 2 (1970) or IEC 207 (1966) or any equivalent internationally recognised standard.

Aluminium wire used in the construction of the conductors shall be drawn from aluminium rod and shall be in accordance with materials GIE in the H9 condition complying with B S 2627 or equivalent internationally recognised standard. The purity of the aluminium in the conductors shall be, not less than 99.5 %, and the content of copper shall not exceed 0,01%.

The strands shall be smooth and free from all imperfections, such as spills & splits. No joints shall be permitted in any strands. -

Any consignment of conductors with protruding steel core will be rejected. All AC SR conductors shall have grease impregnated steel core.

Insulated conductors shall have compacted strands with water blocking powder placed between the conductor and XLPE insulation The insulation shall be Weather resistant carbon loaded XLPE with a minimum thickness of 2.3 mm.

PART 3 CONTRACT

#### 7 MECHANICAI, AND ELECTRICAL CHARACTERISTICS

The mechanical and Electrical Properties of conductors shall be as per table below.

CONDUCTOR CONSTANTS ALUMINIUM CONDUCTORS STEEL REINFORCED								
Item			Pa	aramete	er Valu	.e		
Nominal Area Sq. mm	10	25	50	75	100	150	175	200
Code Name	Magpie	Gopher	Rabbit	Racco on	Dog	Wolf	Lynx	Panthe r
Strands Alum.	3/2.11	6/2.36	6/3.35	6/4.0	6/4.0	30/2.5	30/2. 79	30/3.0
No /diam mm Steel	8	1/2.36	1/3.35	1/4.0	7/1.5	7/2.59	7/2.7	7/3.00
Overall diam.	6.35	7.08	10.05	12.3	14.15	18.13	19.53	21
Geom. Mean Rad. Mm	_	1.77	2.5125	3.075	3.538	7.488		3.673
Overall area Sq. mm	24.71	30.62	61.71	91.98	118.4	194.96	226.2	261.57
Breaking Load kg	18.573	979	1,876	2,774	3 <b>,</b> 335	7,056	85 <b>,</b> 38	9,402
modulus of/Initial	_	6117	6117	6117	5765	6257	6257	6257
Elasticity/Fi nal	183760	8085	8085	8085	7347	7874	7874	7874
Coeff. of linear expansion/ deg.C x 1/1000000	13.68	18.99	18.99	18.99	19.53	17.73	17.73	17.73
Mass kg/km								
Alum.	28.9	71.64	144.62	216.2	260.5	434.31	503.7	582.68
Steel	110.8	34.36	69.38	103.7	133.4	291.69	338.2	391.32
Total	139.7	106.00	214.00	320.0	394.0	726.00	842.0	974.00
AC resistance ohms/km at 20 deg.C	2.707	1.099	0.556	0.387	0.306	0.185	0.159	0.137

PART 3 CONTRACT

#### 8 TESTS

The samples of individual wires for the tests shall normally be taken-before stranding. The manufacturer shall carry out test on samples taken out at least from 10% of aluminium wire spools. The aluminium strands shall comply with the following tests

- a) Breaking load test
- b) Wrapping test
- c) Resistance test

#### 8 PACKING AND MARKING

#### 8.1 CONDUCTOR DRUMS

The conductor shall be supplied and delivered on drums. The flanges and barrels of the drum shaft be made entirely of a suitable and seasoned wood which shall be treated. If hardwood is used, it shall not form more than 40% of the total weight of wood making up the drum, neither shall it be used on the inside of the flanges and barrels, so that it shall not be in contact with the conductor. Spindle holes shall not be less than 60 mm in diameter. The surrounding of the holes shall be suitably reinforced.

The flanges and barrel shall be-free from protruding material capable of damaging the conductor or the hands of the operator during rotation of the drum. The drum flanges shall be solidly secured with solid mild steel rods, nuts and square washers. The batons shall be secured with a minimum of two nails at each end and wrapped with a minimum of two steel bands or galvanized steel wire of **minimum** diameter 2.3nun. The quality of the drums shall cope with at least 3 years of outdoor storage. The drum for the Dog type conductor shall have a diameter of at least 700 mm.

#### 8.2 PACKING

The surface of the barrel and the inside of-the flanges shall be lined with waterproof paper.

The loose end of the conductor shall be firmly stapled to the inside of the flanges.

The drum number shall be branded or gauged into the outside of one of the flanges. An arrow shall indicate the direction in which the drum shall be rolled. A label showing size, type and length of conductor shall be **firmly** secured to the outside of one of the flanges. The label shall be suitably weatherproofed.

#### PART 3 CONTRACT

The gross mass of the drums for the various sizes of the conductors shall be between 1300 and 1000 Kg:

#### 8.3 MARKING

The following information shall be marked on each package:

- a) Manufacturer's name
- b) Trade mark, if any
- c) Drum or identification number
- d) Size and name of conductor
- e) Lengths of conductor
- f) Gross mass of drum
- g) Net mass of conductor
- h) Direction of rolling
- i) Tender number and order number

#### 9. INSPECTION

All tests and inspection shall be made at the place of manufacture unless otherwise especially agreed upon by the manufacturer and REA at the time of purchase. Two REA Engineers shall inspect the material at the manufacturer's premises and the Supplier shall meet all travelling, hotel and all testing costs. The manufacture shall afford the inspector representing REA all reasonable facilities without charge, to satisfy him that the material is being furnished in accordance with this Specification. Alternatively, for imported conductor REA at its discretion may appoint a reputable international Agency such as LLOYDS or SGS to conduct inspection for every shipment consignment. The successful bidder shall arrange and pay for such inspection. All inspection costs shall be included in the bid price. An inspection certification shall be submitted with every shipment of conductor.

#### 10 TECHNICAL GUARANTEE SCHEDULE

#### 10.1 PREAMBLE

- a) The Technical schedule shall be filled in and completed by the Bidder, and submitted with the Bid.
- b) All documentation necessary to evaluate whether the equipment offered is in accordance with this specification shall be submitted with the Bid.

#### PART 3 CONTRACT

- c) All data entered in the schedules of Technical Guarantees are guaranteed values by the Bidder and cannot be departed from whatsoever.
- c) All data entered in the schedules of informative Data are also guaranteed values by the Bidder. These data may only be altered following the Engineer's written consent.

#### TECHNICAL GURANTEE SCHEDULES to be completed by Supplier

Item	Guranteed Parameters	
Nominal Area Sq. mm		
Code Name		
Manufacturer		
Country of Manufacture		
Manufacturer's code		
Physical Address of		
manufacturing facility		
Strands Alum.		
No /diam mm Steel		
Overall diam. mm		
Geom. Mean Rad. Mm		
Overall area Sq. mm		
Breaking Load kg		
modulus of/Initial		
Elasticity/Final		
Coeff. of linear expansion/		
deg.C x 1/1000000		
Mass kg/km		
Alum.		
Steel		
Total		
AC resistance ohms/km at 20 deg.C		

#### PART 3 CONTRACT

#### **DEFINITIONS AND ABBREVIATIONS**

The following terms may be met in these Technical Schedules and shall be interpreted as follows: Ηz shall mean hertz kW shall mean kilowatt MW shall mean megawatt VA (kVA, MVA) shall mean volt-ampere (kilo -, mega -) A (kVA) shall mean ampere (kilo -) V (kV) shall mean volt (kilo -) W/m shall mean watt per metre AC shall mean alternating current DC. shall mean direct current shall mean rated (nominal) current In shall mean rated (nominal) voltage Un Ah shall mean ampere-hours shall mean lumen lm lm/w shall mean lumen per watt min shall mean minute min. shall mean minimum  $\mu$  (prefix) shall mean micro shall mean root mean square rms. p.u. shall mean per unit shall mean peak to peak p/p Τ shall mean Tesla shall mean kilogram kq shall mean Newton Ν shall mean litre 1 Shall mean second s or sec. No. shall mean number Db shall mean decibel Amp shall mean amperes F shall mean Farad  $^{\circ}$ C shall mean centigrade shall mean degree Kelvin K  $m^2$ shall mean square metre (mm<sup>2</sup> for millimetre, etc)  $m^3$ shall mean cubic metre (mm<sup>3</sup> for millimetre, etc)  $m^3/s$ shall mean cubic metres per second shall mean metre m shall mean centimetre cmshall mean millimetre mm joules shall mean joules per hour shall mean metric tonne tonne shall mean percentage  $1 \text{ N/m}^2$ Pascal shall mean centistoke cst

#### REF SPEC. NO. 41005/1996

#### SPECIFICATION FOR LOW VOLTAGE PVC CABLES RATED UP 1000 VOLTS

#### 1. INTRODUCTION

This Specification calls for supply and delivery of LOW VOLTAGE PVC CABLES.

For information purpose the Supplier all recommend a complete list of suitable jointing and termination kits available on the market for the cables being supplied. They should also list the recommended types of terminating and jointing kits.

The Supplier shall include a complete statement of compliance for this Specification. For every clause in this Specification the Supplier shall state compliance or non-compliance and shall elaborate where appropriate.

The Supplier must complete the Technical Guarantee Schedule (Table A).

#### 2. STANDARDS, UNITS AND LANGUAGE

All cables supplied under this specification shall conform to the following standards:

- a) BS 6746 :1969 and subsequent amendments or equivalent
- b) Any other standard, provided the Bidder can provide documentary evidence that the standard is equal to or better than the above standards.

All the Suppliers, correspondence, and all description upon drawings, illustrations or instruction shall be in the English Language.

SI units of measurements shall be used throughout. The cables shall be manufactured to high quality standards. The companies manufacturing the cables shall have ISO certification. Documentary proof of ISO Certification shall be provided with the bid.

#### 3. PARTICULARS OF ENVIRONMENT

The cables will either be subjected to atmospheric or underground environment or both.

#### 3.1 Particulars of Atmospheric Environment

The cables shall be capable of operation under the following atmospheric conditions:

- (a) At an average altitude of 1,500 m above sea level.
- (b) Ambient air temperatures not exceeding +45 degrees centigrade or below -10 degrees centigrade with a maximum daily average of 35°C.
- (c) Humidity 13 mg/cubic metre absolute and 54% relative before storms with vapour pressure 17mm hg.
- (d) Equipment will operate within the tropics and is subject to sudden ambient air temperature changes of the order to 10 degrees centigrade per hour occurring at the onset of rain, but the barometric pressure at any given time does not vary by more than approximately 10 mm mercury.
- (e) Frequent and severe lightning storms occur during summer months, with isoceraunic levels varying between 50 and 100 thunderstorm days per annum.
- (f) Particular attention should be paid in the design of all equipment to ensure that there is no damage to working parts or insulation through the ingress of dust, insects, vermin which are prevalent for long periods in the year.

#### 3.2 Particulars of Underground Environment

In addition to being exposed to the conditions stated in 4.1 the cables shall be capable of operation in the following underground conditions:

- (a) At a depth of burial from the ground surface to centre of the cable, of  $850~\mathrm{mm}$  .
- (b) Mean ground temperature at this depth being 25 degrees centigrade with a maximum value of 30 degrees.
- (c) In soil with a maximum resistivity of 1.2km/W.
- (d) With a foundation or bed of washed pit sand 150 mm deep lain in the trench first, followed by a second 150 mm pit sand above the cable. It is then backfilled by 450 mm of earth before the yellow cable marker ribbon in laid and the trench completely closed.

#### 4. ELECTRICAL EQUIPMENT MATERIALS

All materials incorporated in the equipment supplied shall be new and of first class commercial quality, free from defects and imperfections.

#### 5. CABLE DETAILS

The specification covers from single to multi -core cables with copper or aluminium conductors with PVC insulation.

#### 6. CABLE CONSTRUCTION

The construction of the table shall be as follows:

#### 6.1 Conductor

The conductors shall be plain annealed copper complying with BS 6360 .

#### 6.3 Insulation

The insulation shall be PVC compound and comply with the requirements of BS 6746 Type T11. The identification of the cores shall be by colour as follows:-

- a) Single Core: Red or Black
- b) Two Core : Red and Black
- c) Three Core : Red , Yellow and Blue
- d) Four Core : Red , Yellow , Blue and Black
- e) More than 4 cores : all cores shall be black by numbers

#### 6.4 Fillers

The interstices between the laid up cores shall be filled up with either extruded PVC or other non-hygroscopic material. The fillers shall be of suitable materials which shall be compatible with other materials of the cable and shall be capable of operating continuously at maximum operating temperature of the cable with being adversely affected.

#### 6.5 Bedding

The bedding shall consist of extruded PVC.

#### 6.6 Wire Armour

All cables shall be armoured . Armouring for all cables, with the exception of single core cables, shall consist of one layer of galvanised steel round wire. Single core cables shall have non-magnetic Armouring.

Suitable binder tape may be applied over metallic armour at manufacturer's option.

#### 6.7 Outer Sheath or Serving

The overall finish shall comprise a layer of extruded PVC which shall be black in colour. The ends of the cable shall be marked red where the core colours are clockwise and green at the opposite end.

The outer sheath shall consist of a layer of extruded black polyethylene (PE).

#### 6.8 Bending Radii

The bending radius shall be less that:

- 15 times the diameter for armoured cable
- 8 times the diameter for non-armoured cable

#### 6.9 Cable Marking

A marking bearing voltage designation, maker's name, year of manufacture shall be marked on the outer sheath at suitable intervals throughout the cable. The sheath shall be marked at 1m intervals with progressive numbering indicating the length of cable.

#### **6.10** Constructional and Technical Schedules

Unless approved by the Authority, apart from the highlighted parameters above, all other construction and electrical parameters shall conform to BS 6346:1969.

#### 7. ALTERNATIVE CONSTRUCTIONS

The construction stated in 6. above is the preferred construction. However, suppliers/ manufacturer's can also offer other construction designs provided they can provide documentary evidence that these are an improvement to the preferred designs.

#### 8. TESTS

#### 8.1 General

Tests on cables and cable materials shall be carried out at the manufacturer's premises.

For orders exceeding 15 km of cable a representative from Employer will witness the tests. manufacturer/supplier will meet the full costs for the including the for the costs Employer's representative witnessing the tests. The supplier has to provide type tests certificates for tests carried on the previously manufactured cables of the type specified herein. Bids that do not include test certificates will be rejected. The tests should have been carried out by an internationally recognised and unbiased institute (eg. KEEMA). Documentary proof that the Test Institute is internationally recognised shall be provided with the offer. A minimum requirement is that the Test Institute is used by international clients in testing their products.

REF may decide to waive type tests provided the test certificates fulfil the above requirement. All routing tests are to be carried out in full.

#### 8.2 Electrical Testing

The cables shall be tested according to BS 6346: 1969 .The following tests shall be carried out:

- a) During manufacture all cores shall be spark tested at 6,10,12 kV depending on the conductor size
- b) Finished cables shall be tested at 3000 V rms between conductors and between conductor and armour which shall be Earthed. the cables have to withstand the test for five minutes without breakdown.

#### 8.3 Non- Electrical Testing

The insulation and sheath material shall be tested according to methods stipulated in BS 6346:1969 .

#### 8.4 SEALING AND DRUMMING

The cable shall be wound on strung non-returnable drums arranged to take a round spindle of a section adequate to support the loaded cable drum during installation and handling. The drum shall be lagged with strong closely fitting battens which shall be securely fixed to prevent

#### PART 3 CONTRACT

damage to the cable. Wooden drums shall be constructed of seasoned timber to prevent shrinkage of drums during shipment and subsequent unprotected storage on site. Each drum shall be clearly marked in a manner which cannot be obliterated with the particulars of the cable including voltage length, conductor size, number of cores, type of protective covering, section number, gross and net weight, together with the direction for rolling.

The ends of cables shall be suitable sealed to prevent the ingress of moisture. The end of the cable left projecting from the drum shall at all times be securely protected against damage by mishandling during transport or storage.

Gross drum weights shall not exceed 3000 kg.

#### 9. RATINGS

#### 9.1 Voltage Rating

All cables shall be rated 600/1000 volts.

#### 9.2 Current Carrying Capacity and Design Parameters

The maximum continuous current carrying capacity at the maximum permissible continuous conductor temperature of  $70\,^{\circ}\text{C}$  and the factors for determining such rating shall be based on BS 6346 and subsequent amendments and all conditions prevailing on site as specified herein.

TABLE A

TECHNICAL GUARANTEES (to	filled in by Bidder for	
each type)		
Description	Unit Guarantee	
Max. continuous operating	KV	
voltage		
Max. voltage gradient	kV/mm	
Average voltage gradient	kV/mm	
Less angle (tan $\delta$ )	-	
Reference standards	-	
Type designation	-	
Insulator material	-	
Conductor material	-	
Conductor size	sq.mm	
No. of cores	-	
Thickness of insulation	Mm	
Copper tape thickness	Mm	
Sheath thickness	Mm	
Sheath material	Mm	
Nominal screen area	sq.mm	
Diameter of armour wire (if	Mm	

#### PART 3 CONTRACT

specified)	
Overall diameter	Mm
Mass	Kgkm
Minimum bending radius	Mm
Peak value of impulse	KV
Maximum continuous	
permissible:	
- Phase to earth voltage	KV
- Phase to phase voltage	KV
Maximum tensile strength	N
Maximum conductor temperature	°C
Impedance at 70 degrees and 50	ohm/km
Hz	
AC resistance at 20 degrees	ohm/km
DC resistance at 20 degrees	ohm/km
Inductance	mH/km
Reactance	ohm/km
Capacitance	mF/km
Charging Current	A/km
Short time current 1 second	KA
Earth fault short time 1	KA
second	
Nominal current in air:	
- 1-phase triangular	A
formation	
- 1-phase flat formation	A
- 3-phase cable	A
Nominal current underground	A
Manufacturer's name:	
- HV cables	
- Conductors	
- Terminations and joints	
Country of Manufacture:	
- HV cables	
- Conductors	
- Terminations and joints	

TAKI 3 CUNIKACI	PART 3	CONTRACT
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#### Annexure 1

### DECLARATION ON NON-ENGAGEMENT IN CORRUPT OR FRAUDULENT PRACTICES FORM

The Chief Executive
Rural Electrification Fund
6 <sup>th</sup> Floor Megawatt House
44 Samora Machel Ave
P. Bag A250,Avondale
Harare
Zimbabwe
TENDER NUMBER:
TENDER DESCRIPTION:
I the undersigned (Director of Company) on
behalf of (Name of Organisation), do hereby
declare that our organization has not been engaged in any corrupt or unethical practices
during the subsistence of our organisation.
Name in Full
I. D. Number
Signature
Date

PART 3 CONTRACT	
Annexure 2	
LETTER OF TENDER (TENDER FORM)	
NAME OF TENDER: Supply & Delivery of Conductor cables	
Tender Number REF//2022	
TO: The Chief Executive	
Rural Electrification Fund (REF)	
6 <sup>th</sup> Megawatt House,44 Samora Machel Avenue, Harare, Zimbabwe	
We, [insert name of Tenderer], herewith enclose a Tender for selection of or Contractor/Supplier for	ur firm as
We have examined the Conditions of Contract, Employer's Requirements, S attached. Appendix and Addenda Nos of the above-named Works. We have understood and checked these documents and have ascertained that they contother defects. We accordingly offer to design, execute and complete the Wo any defects therein, in conformity with this Tender which includes all these the enclosed Proposal, for the lump tender sum of:  USD/RTGS	ave examined, ntain no errors or orks and remedy
We agree to abide by this Tender until _date/_month/_year [i.ethe tender opening date] and it shall remain binding upon us and may be accepted that date. We acknowledge that the Appendix to Tender forms part of Tender.	cepted at any time
If this offer is accepted, we will provide the specified Performance Security. Works as soon as is reasonably practicable after the Commencement Date, a Works in accordance with the above-named documents within the Time for guarantee that the Works will then conform to the Schedule of Guarantees.	and complete the
Unless and until a formal Agreement is prepared and executed, this Letter of with your written acceptance thereof, shall constitute a binding contract between Tender is binding upon us and subject to the modifications resulting from princepotiations.	ween us. Our
We understand that you are not bound to accept the lowest or any tender you	u may receive.
Signature in the capacity of	
Duly authorized to sign tenders for and on behalf of	
Address:	
Date:	