UNHCR
United Nations High Commissioner for Refugees
Haut Commissariat des Nations Unies pour les réfugiés

DATE: 06/10/ 2021

REQUEST FOR PROPOSAL: No. RFP 009/2021

NETWORK INSTALLATIONS BOTH IN THE OFFICE AND GUEST HOUSE AT UNHCR KIREHE SUB-OFFICE

CLOSING DATE AND TIME: 26/10/2021 – 17:00 HRS Kigali time

INTRODUCTION TO UNHCR

The Office of the United Nations High Commissioner for Refugees was established on December 14, 1950 by the United Nations General Assembly. The agency is mandated to lead and co-ordinate international action to protect refugees and resolve refugee problems worldwide. Its primary purpose is to safeguard the rights and well-being of refugees. It also has a mandate to help stateless people.

In more than five decades, the agency has helped tens of millions of people restart their lives. Today, a staff of some 6,600 people in more than 110 countries continues to help about 34 million persons. To help and protect some of the world's most vulnerable people in so many places and types of environment, UNHCR must purchase goods and services worldwide. For further information on UNHCR, its mandate and operations, please see http://www.unhcr.org.

1. REQUIREMENTS

The Office of the United Nations High Commissioner for Refugees (UNHCR), Rwanda Office, invites qualified contractors to make a firm offer for: **Network Installation both in the Office and Guest House at UNHCR, Sub-Office Kirehe.**

IMPORTANT:
Bills of Quantities (BoQ) is detailed in **Annex C** of this document.

It is strongly recommended that this Request for Proposal and its annexes be read thoroughly. Failure to observe the procedures laid out therein may result in disqualification from the evaluation process.

Sub-Contracting: Please take careful note of article 7 of the attached General Terms and Conditions (**Annex E**).

Note: this document is not construed in any way as an offer to contract with your firm.

2. BIDDING INFORMATION:

FS

2.1. RFP DOCUMENTS

The following annexes form integral part of this Invitation to Bid:

Annex A: Terms of Reference (Special Technical Specifications) and Technical Drawings
Annex B: Technical Offer/Evaluation Form
Annex C: BOQ/Financial Offer Form
Annex D: UNHCR Vendor Registration Form
Annex E: UNHCR General Conditions of Contracts for Provision of Goods and services
Annex F: UN Supplier code of conduct Rev.06 – December 2017

2.2 ACKNOWLEDGMENT

We would appreciate you informing us of the receipt of this RFP by a return e-mail to rwakisup@unhcr.org

- Your confirmation of receipt of this invitation to bid
- Whether or not you will be submitting a bid

2.3 REQUESTS FOR CLARIFICATION

Bidders are required to submit any request for clarification or any question in respect of this RFP by e-mail to rwakisup@unhcr.org. **The deadline for receipt of questions is 17h30 on 19/10/2021 Bidders** are requested to keep all questions concise.

IMPORTANT:
Please note that Bid Submissions are **NOT** to be sent to the e-mail address above. Bid Submissions sent directly to the e-mail address above will result in disqualification of the offer.

UNHCR will reply to the questions received as soon as possible by means of publication of a Questions and Answers (Q&A) document on its website (https://www.unhcr.org/rw/tenders) or by email to all invited bidders.

IMPORTANT: Site visit at **UNHCR**, **KIREHE SUB-OFFICE, KIREHE District,** is confirmed on **14/10/2021**, at 11:00AM. Bidders are advised to contact**, Mr. Isaac Sikubwabo at 0788402403/0781351801**

Participation to the pre-tender site visit shall be at the bidders' own expenses. There will be no reimbursement from UNHCR.

Participation to the pre-tender site visit is **mandatory given the complexity of the requirements.** However, after the site visit, a Questions & Answers document will be prepared and posted on the UNHCR website (https://www.unhcr.org/rw/tenders) or distributed by email to all invited bidders

2.4 YOUR OFFER

IMPORTANT:

FS

Cancellation of Solicitation: UNHCR reserves the right to cancel a Solicitation at any stage of the procurement process prior to final notice of award of a contract.

Your offer shall be prepared in English.

Please submit your offer using the Annexes provided. Offers not conforming to the requested formats may be not taken into consideration.

IMPORTANT: Inclusion of copies of your offer with any correspondence sent directly to the attention of the responsible buyer or any other UNHCR staff will result in disqualification of the offer. Please send your bid directly to the address provided in the "Submission of Bid" section 2.6) of this RFP.

Your offer shall comprise the following two sets of documents:

- Technical offer
- Financial offer

2.4.1 CONTENT OF THE TECHNICAL OFFER

IMPORTANT: No pricing information should be included in the Technical offer. Failure to comply may risk disqualification. The technical offer should contain all below information required.

The Bills of Quantities (BoQs) of the services requested by UNHCR can be found in (**Annex C).** Your technical offer should be concisely presented and structured in the following order to include, but not necessarily be limited to, the following information:

- **Company's profile and qualifications**
  Description of your company with the following documents: Company profile, registration certificate and last audit reports:

  - Year founded.
  - If multi location company, specify headquarters location.
  - Number of similar and successfully completed projects.
  - Number of similar projects currently underway.
  - Total number of clients.

Any information that will facilitate our evaluation of your company's substantive reliability, financial and managerial capacity to provide the services.

- **Proposed personnel to carry out the assignment**
  The composition of the dedicated team you propose, their qualifications and experience. Curriculum Vitae of core staff/Engineers.

- **Understanding of the requirements for the project, proposed approach, solutions, methodology and outputs:**
  Any comments or suggestions on the BOQ, drawings, as well as your detailed description of the way your company would respond to the project

- A description of your organization's capacity to execute the tasks
- A description of your organization's experience in these services
- Well drafted schedule of activities

FS

- **Vendor Registration Form:** If your company is not already registered with UNHCR, you should complete, sign and submit with your technical proposal the Vendor Registration Form (**Annex D**).
  If your company is already registered with UNHCR, please submit an empty Vendor Registration Form clearly indicating your UNHCR Vendor ID

- **UNHCR General Conditions of contracts for civil works:** Submission of your offer is deemed acceptance of the UNHCR General Conditions of contract for Civil Works (**Annex E).**

2.4.2 Content of the FINANCIAL OFFER

Your separate **Financial Offer** must contain an overall offer in a single currency, Rwanda francs (RWF).

The financial offer must cover all goods and services to be provided (price "all inclusive").

The Financial Offer is to be submitted as per the Financial Offer Form (**Annex C**). Bids that have a different price structure may not be accepted.

UNHCR is exempt from all direct taxes and customs duties. With this regard, price must be given without VAT.

You are requested to hold your offer valid for 120 days from the deadline for submission. UNHCR will make its best effort to select a company within this period. UNHCR's standard payment terms are within 30 days after satisfactory implementation and receipt of documents in order.

The cost of preparing a bid and of negotiating a contract, including any related travel, is not reimbursable nor can it be included as a direct cost of the assignment. Any activity undertaken or expenses incurred in preparation of a contract before an actual contract is signed shall be borne by the Bidder. An advance notice or information of award is not to be considered as a contract.

UNHCR will not provide any advance payments or payments by letter of credit. The standard payment terms are by bank transfer net thirty (30) days after acceptance of contractor's invoice and delivery of the goods to the and/or acceptance by UNHCR of the services.

2.5 BID EVALUATION

Each proposal from a Bidder will be considered separately and independently. Bidders shall submit a complete proposal for each solicitation in which they wish to participate. References to previous or on-going proposals will be not considered. Award of a previous contract with UNHCR will not be considered as a preference or guarantee for the award of future solicitations on the same subject.

2.5.1 Supplier Registration

The qualified supplier(s) will be added to the Vendor Database after investigation of suitability based on the submitted Vendor Registration Form and supporting documents. The investigation involves consideration of several factors such as:

- Financial standing.
- Core business.
- Track record.
- Contract capacity.

FS

Failure to provide the abovementioned documentation, might lead to disqualification.

2.5.2 Technical and Financial evaluation:

For the award of this project, UNHCR has established evaluation criteria which govern the selection of offers received. Evaluation is made on a technical and financial basis. The percentage assigned to each component is determined in advance as follows:

The **Technical offer** will be evaluated using inter alia the following criteria and percentage distribution: 6**0%** from the total score (60 points of 100 points).

Technical Evaluation Criteria - see details in Technical Evaluation Form (Annex C)	**Percentage (%)**
Eligibility (mandatory requirements, that a company must meet for evaluation)	Pass/Fail
Work planning, Site Management and Assessments [ii].	10
Delivery deadlines [iii] provision reasonable delivery period	10
Relevant experience on undertaking similar projects with other Companies/Organizations [vi]	10
Bill of Quantity and Technical specification of items to be used [v]	10
Provision of qualifications of the dedicated team to the project and presentation of this team [vii]	10
Presentation of Warranty of achieved works [vii],, Staff training offer and after-sales services [viii]	10
Total:	**60%**

The Technical offer score will be calculated according to the percentage distribution for the technical and financial offers.
The cut-off points for submissions to be considered technically compliant will be **40% out of the 60%.**

Clarifications of Proposals

To assist in the examination, evaluation and comparison of proposals UNHCR may at its discretion ask the Bidder for clarification about the content of the proposal. The request for clarification and the

FS

response shall be in writing and no change in price or substance of the proposal shall be sought, offered, or accepted.

The **Financial offer** will use the following percentage distribution: **40%** from the total score.

The financial component will be analyzed only for those suppliers that pass the technical evaluation The maximum number of points will be allotted to the lowest price offer that is opened and compared among those invited firms. All other price offers will receive points in inverse proportion to the lowest price, e.g., [total Price Component] x [RWF lowest] \ [RWF other] = points for other supplier's Price Component

2.6. SUBMISSION OF BID

The offers must bear your official letter head, clearly identifying your company.

Bids should be submitted by e-mail and all attachments should be in PDF format. (Copies of the PDF format documents may, as an addition, be included in Excel or other formats etc.). **The Technical and Financial offers shall be clearly separated**.

Bid must be sent by e-mail ONLY to: RWAKIBIDSR@unhcr.org

IMPORTANT:
The technical offer and financial offer are to be sent in separate email attachments. Failure to do so may result in disqualification.

Deadline: 26/10/2021, 17:00 HRS Kigali Time.

IMPORTANT:
Any bid received after this date or sent to another UNHCR email address may be rejected. UNHCR may, at its discretion, extend the deadline for the submission of bids, by notifying all prospective bidders simultaneously.

It is your responsibility to verify that all e-mails have been received properly before the deadline. Please know the e-mail policy employed by UNHCR limits the size of attachments to a maximum of **8 Mb** so it may be necessary to send more than one e-mail for the whole submission.

Please indicate in e-mail subject field:
- Bid RFP/009/ HCR/RWAKI/2021(Technical Offer)- for the Technical Offer
- Bid RFP/009/ HCR/RWAKI/2021(Financial Offer)- for the Financial Offer
- Name of your firm with the title of the attachment
- Number of e-mails that are sent (example: 1/3, 2/3, 3/4).

For example: RFP/009/HCR/RWAKI/2021, Company ABC (email 1 of 3)

UNHCR will not be responsible for locating or securing any information that is not identified in the bid. Accordingly, to ensure that enough information is available, the bidder shall furnish, as part of the bid, any descriptive material such as extracts, descriptions, and other necessary information it deems would enhance the comprehension of its offer.

2.7. BID ACCEPTANCE

UNHCR reserves the right to accept the whole or part of your bid.

UNHCR may at its discretion increase or decrease the proposed content when awarding the contract and would not expect a significant variation of the rate submitted. Any such increase or decrease in the contract duration would be negotiated with the successful bidder as part of the finalization of the Purchase Orders for Services.

UNHCR may, at its discretion, extend the deadline for the submission of bids, by notifying all prospective suppliers in writing. The extension of the deadline may accompany a modification of the solicitation documents prepared by UNHCR at its own initiative or in response to a clarification requested by a prospective supplier.

UNHCR at its own discretion reserve the rights to accept or cancel the whole tender at any stage.

Please note that UNHCR is not bound to select any of the firms submitting bids and does not bind itself in any way to select the firm offering the lowest price. Furthermore, the contract will be awarded to the bid considered most responsive to the needs, as well as conforming to UNHCR's general principles, including economy and efficiency and best value for money.

2.8 CURRENCY AND PAYMENT TERMS FOR PURCHASE ORDERS

Any Purchase Order (PO) issued as a result of this RFP will be made in RWF. Payment will be made in accordance to the applicable general conditions of the contract and in the currency in which the PO is issued. Payments shall only be initiated after confirmation of successful completion by UNHCR business owner.

2.9 UNHCR GENERAL CONDITIONS OF CONTRACTS FOR THE PROVISION OF SERVICES.

Please note that the UNHCR General Conditions of contract for provision of Goods and services (**Annex E**) will be strictly adhered to for the purpose of any future contract. The Bidder must confirm the acceptance of these terms and conditions in writing.

Felix SEHI
Supply Officer
UNHCR Rwanda

Digitally signed by Felix Sehi 06/10/2021

ANNEX A: TERMS OF REFERENCE (SPECIAL TECHNICAL SPECIFICATIONS) AND TEC
DRAWINGS

POWER AND DATA STRUCTURED NETWORK INSTALLATIONS KIREHE SUB-OFFICE

REALIZATION OF UPS POWER INSTALLATION AND A CATEGORY 6A NETWORK CABLING INFRASTRUCTURE FOR VERY HIGH-RATE DATA TRANSFER FOR VOICE AND DATA APPLICATIONS FOR THE UNHCR FIELD OFFICE IN KIREHE IN RWANDA

SPECIAL TECHNICAL SPECIFICATIONS

Contents

FS

FS

FS

1. Generalities

1.1. Goals and needs

The purpose of this document is to define the technical specifications for power and data structured installations in the premises of UNHCR Compound in Kirehe Sub Office. Developed by the UNHCR ICT team in Rwanda, responsible entity for the administration and management of the network; it defines the framework of the requested service to meet the needs of UNHCR, particularly in terms of performance, reliability, scalability and compliance with regulations.

The requirements expressed concern the supply, installation, testing, commissioning and acceptance of structured power installation and data network (LAN)using Category 6A - Class E VDI (***Voice, Data and Images***) standard structured cabling system. This cabling system will provide the transport of VDI signals, all in a transparent way.

The structured LAN installation is category 6A network and in order to meet future needs, it must allow easy maintenance and possible scalability.

In order to guarantee a great flexibility, the wiring to be made must be commoditized and modular. It must be efficient and allow each workstation to be connected to the various telephone and computer systems used (at least application class E).

The operations envisaged within the framework of these services will occur in continuity and without disruption of the service and will be done all day.

The power structured installation from the Central UPS to be terminated in the server room will run computers. This includes the site installation, the earth electrode installation, installation of electrical cabinets, Installation of power supplies socket outlets for the use of computer equipment and installation of electrical backup system for network equipment in the server room.

The validity of the offer is guaranteed by the proof of site visit which is mandatory.
The components to be used shall be of good technical quality, preferably Schneider or LeGrand Brand Marks.

1.2. Opening remarks

In all that follows, the mention S.T.S means Special Technical Specifications, i.e., this document.

Project management for this work is provided by the Administration/ICT section of UNHCR in Rwanda.
The contractor awarded the contract, will appoint a project manager acting for his name during the full duration of the project. It will be the single point of contact with the client to ensure good communication and close collaboration. The interventions will be executed under the direction of the contractor who must strictly comply with the requirements of the client.

The Contractor shall be responsible for all employees assigned by himself, his co-contractors and subcontractors to this operation, under any circumstances and for any reason whatsoever. He will be responsible for accidents and thefts because by and/or to, the personnel under his responsibility. Similarly, the damage of any kind produced during the performance of its work will be at his expense. The project manager reserves the right to prohibit access to the site to staff deemed by him undesirable.

The project manager will have to inform all the personnel assigned to the operation of the nature of the environment of the intervention sites, after having taken cognizance of his own initiative with the local manager. He will have to adapt his intervention to the environmental conditions and will not be able to avoid the obligations of the market nor raise the claim.

The Contractor shall, if he deems it necessary, make any corrections and include the financial implications in his unit price by means of a separate annex to the tender corresponding to the present T.P.T.C.B

The Contractor must inform the client in writing of any error, omission, inaccuracy or contradiction detected. If this is not the case, the present S.T.Sis considered accepted in its entirety. In case of dispute related to a difference of interpretation of the S.T.Sduring the execution of the works, the client's (UNHCR) interpretation will prevail.

1.3. Confidentiality

The contractor is bound by professional secrecy. In particular, he undertakes to use the documents and information provided by the contracting authority only within the framework of this consultation.

Any unauthorized disclosure and / or disclosures may give rise to damages and interest to be paid by the party who committed them. The amount will be determined by the complainant based on the damage.

1.4. Compliance with rules and internal regulations

Bidders are required to comply with UNHCR rules of procedure in all phases of the project.

1.5. Documents to be submitted at the same time as the proposal to the project owner

The Contractor is required to submit an offer complying with the technical requirements of this S.T.S any offer that does not meet the required technical specifications will result in the elimination of the bidder.

The Contractor must provide at least but not only:

- An engineering brief.
- Decomposition of the Lump Global amount (DLGA).
- A table summarizing the references of the proposed materials.
- The complete technical instructions for the proposed equipment (cabinets, cables, male and female connection modules, faceplates, panels, racks, etc.).
- For Data network installations, the manufacturer shall guarantee all Class E "Permanent Link" level links for a minimum of 20 years.
- Evidence that the personnel working on the site has a proven track record in Structured Power Network and Structured Data (LAN) network installations.
- Succinctly, in a very precise and fair manner the schedule of work to be done.

1.6. Work to be done by the contractor.

1.6.1. Execution file

1.6.1.1. At the tendering

For both (Power and Data Network installations) the following mandatory documents must be sent in two (02) copies:

- A quantitative quote completed and quantified,
- A technical documentation, with photocopies, detailing all the characteristics of the materials presented by the Company.

1.6.1.2. After the selection and during the works

Before the start of the works, the contractor awarded the contract must make available to the project manager, an execution file for validation consisting of:

- **For Power structured installation:**

The contractor shall submit for UNHCR evaluation standards, catalogues, manuals and drawings of all proposed materials and equipment to present the proposed equipment. The contractor shall also, prior to any procurement obtain the UNHCR approval for any departure and deviations from the final design drawings and specifications.

- **For Data Structured LAN (using Category 6A - Class E VDI (*Voice, Data and Images*) standard cabling system:**
  - Layout plans for wireless access points and cable routing.
  - Filing in tabular format, on paper and in computer file in an MS Office compatible format, comprising:
    - For each link number, the number of the part served by the terminal outlet.
    - For each equipped room, the numbers of the links which serve it.
- **For both (*Power and Data structured installations*)**
    - The comprehensive technical manuals of equipment.
    - The schedule of work to be done.
    - The duration and conditions of warranty.

1.6.1.3. Upon completion of the work

For both (Power and Data structured installations) The Company must provide, on the day of the handover of the completed works:

- The plans and diagrams of the installations carried out,
- The test reports in accordance with the agreement with UNHCR.
- The maintenance file and the warranty as agreed with UNHCR.

For Power structured network only, the Contractor should propose a “Frequency of Periodic verification” and a template for “Reporting for periodic verification”.

The acceptance can be pronounced only in these conditions.

1.6.2. Work to be done by the Contractor.

The Contractor must ensure that the server room has a 330 mm raised floor. All trunking (be it vertical or horizontal) must be installed flush with the wall.
UNHCR will provide the invertor, charger, batteries, and photovoltaic plates required for the installation of a solar energy system. The contractor will be responsible for providing the best cables and battery terminations for the installation of Solar Photovoltaic power supply system.

For the structured Data network installation, Switches, routers, Access Points and other active network components shall be provided by UNHCR.

The Contractor must also take the necessary measures to ensure the perfect completion and smooth operation of the works. In particular:

- **For the structured power network installation**
  - The site installation including the use of trenches for power cables and the realization of additional trenches needed.
  - Supply and installation of UPS power distribution board with at least eighteen (18) ways that could carry currents of 380 to 415 V and 32 amperes.
  - Supply and installation of two circuit breakers of 200 amperes. One between the central UPS and the main source and another between the central UPS and the main distribution board.
  - Carry earth electrode installation to protect the whole UNHCR compound.

FS

- Supply and installation of enough rigid electric cable of U1000R02V – 1 x 2.5mm^2 (single core in black, blue, and red colors) so as to supply one ninety (190) double socket outlets and racks installed within the whole compound as detailed in Annex III. The cable must be UV-resistant and protected from rodents and bad weather.
- The installation of electrical cabinets according to the proposal hardware implementation.
- The supply and installation of power supply outlets as detailed in Annex III.
- The installation of electrical backup system in the server room.
- The Installation of Solar Photovoltaic power supply system and Battery Bank.

- **Category 6A - Class E VDI (Voice, Data and Images) standard cabling system for the structured and integrated data network installations:**
  - Supply and installation of four (02) 42U, 600 x 1000mm (W x D) Deep Data Cabinet Installer Bundle in the server room of the office building with at least this component:
    - Fifteen (15)24-Ports CAT6 Unshielded1, 19-inch, 1U, Rackmount, Horizontal Punch, five (05) per rack in the server room.
    - Six (6) 6-Way 1U 19-inch Horizontal Rackmount PDU (C13) Socket to UK Plug, two (02) per rack in the server room.
    - One hundred thirty-two (132) of 1m and one twenty eighth (128) of 3m CAT6 FTP Ethernet Cable/Patch Lead, RJ45 Flush Moulded.
    - One (01) 12-Ports Fibre Switch (Patch panel with LC connectors mid couplers), 19-inch, 1U.
    - Two (02) 1m multimode optical fibre SC-LC patch cords
    - Two (02) 10m multimode optical fibre LC-LC patch cords
    - Four (04)1m multimode optical fibre LC-LC patch cords

  - Supply and installation of One hundred thirty-two (132) RJ45 double outlets ports for structured and integrated data connections as detailed in Annex III.

- **For both (Power Structured and Data structured and integrated Network installations)**
  - Supply and installation of corrugated ducts and signaling grids in the completed trenches.
  - Perform Piercings, drilling holes, seals and special devices to cross the walls.
  - The lining of all the drillings made respecting the constructive provisions of the buildings
  - All supports and hangers.
  - Finishing paints and fittings of existing surface coatings modified or altered by its intervention.
  - The reprises of leak-tightness.
  - The necessary debugging tests to restore the installation to perfect working order and to deliver it in accordance with the technical and functional specifications of this document.
  - The removal of any packaging, unused supply, waste of supply or work.
  - Documentation
  - The participation in acceptance operations.
  - The guarantee of its installations (parts, labor and displacements).

At the slightest uncertainty as to the conditions of execution, the contractor will have to refer to the project owner for an adjustment.

1.7. Additional information

FS

The Contractor has the opportunity to obtain any additional technical information enabling him to draft his proposal by soliciting the client.
In the same way, during the bid analysis phase, the contracting authority reserves the right to ask the Contractor for any additional information allowing him to clarify his analysis and validate his choices.

1.8. Site visit

The site visit is mandatory and will be one of the mandatory conditions before the validation of each offer.

This site visit will allow the Contractor not only to have an idea of the constraints related to the project, it will also allow him to present a qualitative and quantitative reliable quotation.

2. Technical specifications

The electrical and data cables should run on the trunkings. The trunkings should be flush to the wall.

The contractor must provide 150mm x 60mm three (03) compartment trunkings with all the accessories and the joineries for the whole installation.

2.1. Structured power network installation

2.1.1. Standards and Regulation

The standards and specifications used for this tender shall comply with the latest editions of Rwanda National Bureau of Standards (UNBS) and Codes of Practice or in their absence the Institution of Electrical Engineers (IEE) or British and The International Electro Technical Commission (IEC) Standards. In Absence of each standard and code of practice, UNHCR shall be consulted along with the Authority, to get permission for utilization of good professional practice.

In particular, the following standards and Practices of the standards specifications for Building Works of the Rwandan Ministry of Works and Transport shall apply:

- The whole of the Electrical works shall be carried out in compliance with:
  - Building Code “Electrical Installation and Equipment in Buildings-Regulation, 2004”
  - The latest Regulation of Rwanda Electricity Distribution Company
  - The Relevant Regulation on BS 7671:1992 and Amendment No.1,1994 (AMD 8536)
  - Requirements for Electrical Installation (IEEE wiring Regulation’s 16th Edition
  - IEC publication 60364-Electrical Installations of Buildings Part 7-712: Requirements for special installations of Solar Photovoltaic power supply system.
  - The latest relevant recommendations of the International Electro Technical Commission and other approved national Standards.

Except where otherwise indicated in the specialist, the contract work and all manufactured items shall comply with the relevant BS or International as appropriate. In each case, the latest edition of such specification shall apply. Should it be necessary to order equipment cover by other National or International Standards, the approval of ONHCR must be obtained in writing before the completion of the tender documents.

2.1.2. Power Intake-Underground and Overhead

Underground cable ducts for incoming power supply cables and Data service cables to the building shall be supplied by the Contractor. It shall be the responsibility of the Contractor to ensure that the underground dust is installed correctly according to each party requirement, and to the purpose. The contractor shall liaise closely with the Rwanda Electricity distribution type. Ends shall be made using adhesive compound to ensure that their requirements supplied or recommended by the conduit are

fully satisfied. It shall be the Contractor's manufacturer responsibility to ensure that adequate information concerning easy bends directions or runs etc. is given before work commence.

Overhead suspended cables shall be mounted so that the lowest point is at least 2.7m above ground level. The cable shall be held in position by suitable brackets and strain relief to prevent mechanical wear and stress of electrical connection. Cable for Outdoor exposed usage shall be fully UV-resistant and protected from rodents and bad weather.

Underground cables shall be PVC insulated

Pre-cast concrete and PVC pipes shall comply with BS 3505 and BS 5481 respectively.

Manhole shall be in pre-cast concrete C-20 quality, brick or Class A Hollow blockwork as indicated and detailed on the drawing. The manholes shall be laid on a minimum concrete bed of 150mm, C-20 concrete. Manhole other than pre-cast concrete shall be rendered internally and externally with two coasts of cement mortar. Joint of pre-cast concrete manholes shall be flush pointed. Manhole's cover shall be in cast iron and frames or C-25 pre-cast.

2.1.3. Conduits for internal wire drawing

All metal conduits shall be medium gauge and shall be laid in straight and symmetrical lines. The end of all conduits shall be carefully reamed to remove all burrs and sharp edges after the screw treads have been cut. The end of the conduits shall be butt welded solidly in all couplings and where conduits terminate in switch fuses. Fuse board adaptable boxes shall be connected thereto by means of smooth bore male brass brushes, compression washers and sockets.

All bends shall be made on site to suit site conditions and not more than two right angle bends shall be permitted without the interposition of a draw box. No tees, elbows or bends will be permitted, unless specifically mentioned in the specification or on the drawings.

All PVC, conduits shall be of high impact PVC type. Ends shall be carefully trimmed of all burrs. Joints shall be made using adhesive supplied or recommended by the conduit manufactured.

2.1.4. Cables (single and Multi-Core) and Conductors

Underground cables shall be PVC insulated, PVC bedded, steel wire unarmoured-armoured and PVC served overall. Unless specifically indicated otherwise, all cables shall have multi-strand copper conductors.

Cables shall be in accordance with building Code "Electrical Installations and Equipment in Buildings-Regulation, 2004" and shall be of approved manufacture in accordance with BS 6004, 6007 and 6346 or other appropriate BS, IEC or manufacturer's standard and specification and the current carrying capacity of the conductors shall be according to Building Code "Electrical Installations and Equipment in Buildings-Regulation, 2004" APPENDIX 3 and the relevant tables in the IEE Wiring Regulations 16th Edition.

All internal wiring shall be in PVC insulated cable and/or conductors and colour identification shall be in accordance with the relevant Clause of Building Code "Electrical Installations and Equipment in Buildings-Regulation, 2004".

Underground cables shall be at least 1m below the surface and be indicated with markers (coloured plastic tape, minimum 50mm wide or lining with bricks or slates, 0.2m above the cable).

Before cables are laid, the bottom of the trench shall be evenly graded and cleared of loose stones and shall then be covered with 50mm layer of sand or sieved earth which shall have been pressed through sieve with maximum mesh of 13mm.

The cable shall be carefully laid in the bed without dragging and they shall then be covered with fine sand or sieved earth in such quantity as to ensure a cover of 75mm after tamping.

The wiring tape shall be coloured yellow/black stripes and bear the following legend in block black capitals, at regular intervals: CAUTION-ELECTRIC CABLE BELOW" it shall be laid at a depth 200mm below final grade.

Concrete marker posts shall be erected at intervals of 10m and at changes of directions of cables trenches and throughout the length of cable rout. A plate shall be fixed to the post stating 'buried Cables" and their position marked on the final "AS INSTALLED" drawings.

Adequate number of ducts shall be provided at points of Entry into buildings. These shall be in form of easy sweep ends, having a bending radius appropriate to the size of the largest cable but in any case, not less than 10 times a cable diameter.

After installation and the final tests, all cable ducts will be sealed using fine resistant materials to the satisfaction of UNHCR to prevent ingress into building of water, vermin termites etc.

2.1.5. Main and Sub Distribution boards

The contractor shall supply and install distribution boards in the positions indicated on the drawings. All main, sub-main distribution boards shall be complete with isolator or fused switch as applicable and shall confirm to BS EN 60439. Distribution boards shall be in accordance with Building Code "Electrical Installations and Equipment in Buildings-Regulation, 2004". The Contractor shall submit detailed drawings of the proposed panel layout for approval of UNHCR.

The distribution boards shall be complete with all necessary earth bonding, gland-plates, cable entries, fixing brackets and supports for the cables specified and the locations indicated.

The distribution boards shall be of the type fully enclosed sheet steel or PVC cabinets with hinged cover and protection class shall not be less than IP43. Each compartment shall be a one standard panel section having the number of pitch units as detailed in the drawings. Boards shall consist of approved single, double and triple pole moulded case and/or miniature circuit breakers. The current rating and the type of each panel shall be indicated on the appropriate distribution boards' diagram.

In compliance with BS EN 60439, UNHCR shall be provided with an internal circuit designation chart. These shall be securely fixed and equipped with Perspex or similar cover and shall have space for each outgoing circuit to give clear identification. Unprotected paper labels will not be accepted.

The main switchboard and control panels shall be equipped with voltmeter, ammeter selection switches and indicating lamps. All instruments and protective relays shall be flush mounted and effectively sealed against ingress of moisture dust and insect.

Moulded-case circuit breaker shall comply with BS EN 60947-2. They shall have the voltage and current ratings, rated duty, rated short-circuit breaking capacity and rated short time withstand current as indicated.

Miniature circuit-breakers shall comply with BS EN 60898 and shall have the voltage and current ratings and category of duty and be of the type as indicated.

Contactors shall comply with BS EN 60947-4-1 and be electromagnetic suitable for the control arrangement as indicated.

The design and arrangement of the panel shall be such as to permit the ready addition (scalable) or replacement of incoming and outgoing cables. There shall also be ready access to any component requiring maintenance including all bolted or clamped connection.

FS

Un-used reserve pitch units shall be fitted with moulded plastic cover strips. Full facilities shall be provided within the panels for the fitting of future additional circuit breakers. The circuits fed from the distribution board shall be marked on a card fixed to the inside of the lid. This card must indicate without ambiguity the location of all the outlets fed form each distribution way and the size of the fuse or circuit breaker rating. The information must either be typed or printed on the card or presented in similar legible manners.

Distribution and sub-distribution boards, bus bar rating, type of mounting (surface, flush) etc. shall be indicated in the drawings. The reference number of Board shall be used in the bill.

2.1.6. Wiring Accessories, Small Equipment and Material

Accessory boxes shall comply with BS 4662 or BS 5733 and where they are of insulating material, they shall have the ignitability characteristic 'P' as specified in BS 476.

Accessory boxes shall be of adequate depth to accommodate the accessories without causing compression of the cable. Generally, boxes shall be 35mm deep and shall have one fixing lug that is floating so that the final level of the accessory can be adjusted.

Front plates of accessories shall be of the material and finish as indicated, but generally the finish of various types of accessories in the same area shall match. For flush mounting the plate shall overlap the boxes. For surface mounting, plates shall match the profile of the box without overlap.

Wall mounted switches located inside buildings shall have rocker type actuating members unless otherwise indicated. Where mounted adjacent to another, they shall be grouped in a multi-gang with common front plate.

Socket outlets for wet location and open area shall be provided with spring loaded cover required to achieve total enclosure to ensure the required degree of protection against moisture.

Unless otherwise indicated, time switches shall be self-starting, self-winding, synchronous motor type rated at 230 volts. The motor shall be protected by a fuse, which shall be easily accessible. The rated current of the switch shall be as indicated.

The sensing unit of photo-electric control shall comprise a photo-conductive cell enclosed in a translucent plastic dome sealed to a mounting base. The control unit shall comprise a load controlling single pole switch; its rated current shall be as indicated.

Terminal blocks shall comprise connectors contained within a moulded housing. The moulded housing shall be of an insulating material suitable for the maximum operating temperature of the conductors.

Conductors shall be clamped between metal surface and no screws shall make direct contact with conductors. The design shall be such as to maintain sufficient contact pressure to ensure connections of negligible impedance at all time.

Mounting heights of accessories or equipment shall be in accordance with Building Code "Electrical Installations and Equipment in Buildings-Regulation, 2004". Unless otherwise indicated. Where difficulty in locating of accessories or equipment occurs. The Engineer shall be consulted.

2.2. Structured and Integrated Data Network using Category 6A - Class E VDI (Voice, Data and Images)

2.2.1. Standards and Regulation

The pre-cabling installation will comply with the following international and European standards:

- EIA / TIA 568 B.
- PN 2948, PN 3287, PN 3193 and TSB 67.
- ISO / IEC 1801 version 2.

FS

- EN 50167 (horizontal distributions).
- EN 50168 (cables connections)
- EN 50169 (vertical distributions) EN 50173.
- EN 50174 (installation guide)
- HD 608 (cables and cabling systems).
- The following directives and standards for electromagnetic compatibility (EMC): EMC Directive 89/336 EEC a (amended by 92/31 EEC and 93/69 ECC).
- EN 55022 (emission / class B) EN 50081.1 (emission)
- EN 50082.1 and Pr EN 55204 (immunity).

2.2.2. Expected performance of links

The cabling system will comply with the European standards EN 50173 (components & system), EN55022 (EMC), as well as ISO / IEC 11801 Class E_A 11801.
The implemented wiring system should support all existing IEEE, EIA / TIA and ISO protocols defined as working on this medium for a minimum of 15 years.

The cabling system shall incorporate end-to-end compatibility with the IEEE 802.3af standard, namely, to allow low-voltage power transmission over copper cable links.

2.2.3. Components of the wiring system

The expected installation will be of VDI type (standard cabling for IT and telephony) on an infrastructure corresponding to the performance standards category 6 (Class E) organized in a star pattern to the distribution frames of the building.
The expected performance of each link must at least comply with the "permanent link class E" performance of ISO / IEC 11801 Edition 2.

The cabling system must support all IEEE, EIA / TIA protocols and existing ISOs defined as working on this medium for **a minimum of 20 years**.

All installed components will be new and certified at least category 6, according to the standard ISO / IEC 11801 edition 2 and standard EIA / TIA 568B.21 of June 2002. They must have all the guarantees of good operation. The category of the complete link will be that of the component of the lowest category.
The contractor has the obligation to provide a link chain consisting of elements of necessarily uniform quality of a single manufacturer, type compatible INFRA +, resulting in a complete "**permanent Link Class E**" guarantee from end to end of the wall socket to the bay strips.
The cabling system will have to integrate end-to-end compatibility with the IEEE standard 802.3af (**PoE**), namely, to allow the transmission of low voltage current on the copper cable links.

At this level, telephony and computers will be completely integrated, the assignment to be made according to the needs with the greatest flexibility possible at the output of the patch panel. The infrastructure for telephony will be up to the integrated bay in the computer.

2.2.4. "Copper" cable

The "copper" distribution will be made from cables comprising a general braid and an individual screen by quarter, four pairs of single-stranded twisted wires of characteristic impedance of 100 Ohms (U / FTP). The bandwidth performance of the cable will be at least 350 MHz. The cables will comply with the performance of Class E and F channel as described in ISO / IEC 11801 Edition 2. The routed cables can be once 4 pairs or twice 4 pairs depending on what will be deemed most convenient by the provider.

The outer sheath will be of any colour other than black to limit confusion with electrical cables.

FS

The company shall provide category 6a cable performance compliance certificates in accordance with ISO / IEC 11801 Edition 2 and the EIA / TIA 568B.21 standard, performed by an accredited and independent test laboratory.
The company must provide the technical data sheet of the cable, indicating, among other things, the Nominal Velocity of Propagation of the cable (N.V.P).

2.2.5. RJ45 connectors

The connector selected will be RJ45 type (except for Fibre switches, which will use multimode SC-LC fibre patch cord) in accordance with IEC 60603-7-51, identical to both ends of the vertical and horizontal distribution cable (terminal and patch panel) and will have the following characteristics:

- Category 6A performance according to IEC 60603-7-51 (for shielded connectors). a metal shielding cap (not made of metallized plastic) with a metal braid allowing the 360 ° cable screen to be taken back.
- The rear forks of the self-stripping connections must be protected to prevent their deformation during the implementation.
- The configuration of the connections of the pairs must be in accordance with the connection method "T568A" or "T568B" according to the manufacturer's recommendation. The configuration of the connections must be unique throughout the building.
- A mobile protection flap (on the connector or front plate).
- A cable tie "anti-traction pair".
- The Contractor must provide the technical data sheet of RJ45 connectors.

2.2.6. Terminal socket

The outlets at the workstation will be installed in a trunking. The faceplates used for the terminal sockets will be in mosaic format 45 * 45mm.

The sockets will have a movable and irremovable protective shutter. The shutter can be on the connector or the plastron.
Outlets will also be equipped with a system for marking and identifying connectors. A removable transparent protective flap will protect the identification tag. Unprotected labels will not be accepted.

The colour of the plastrons and / or trunking will be white unless otherwise specified in writing by the supervisor.
The Contractor must provide the technical data sheet for the terminal sockets.

2.2.7. Intermediate distribution cabinet

This chapter defines the essential characteristics of each Intermediate distribution cabinet of the residential houses.

The 09U 600mm Deep Data Cabinet will be installed in one of the rooms located in the centre of each residential block (national, mission and international).

The side panels of the brewing bay will be removable to allow easy access to equipment installed in the bay. Each bay will be all-metal, equipped with two standard 19-inch chassis (front and rear) provided for the use of standard square cage nuts, will have a welded frame and have horizontal cable runs to the front and back. These horizontal grommets will be provided with plastic windows in the catalogue of the manufacturer of the bay, to protect the patch cords.

A glass front will equip the front door of the cabinet.
The back door of the cabinet will be equipped by split mesh door, vented side panel.
The side panels will be removable to allow easy access to equipment installed in the bay.

FS

The chassis of the rack must be connected to the ground by means of a green / yellow conductor of at least 6 mm². If the measurement of the earth value is greater than 5 ohms, a direct link to the earth of the building must be created using a conductor of at least 16 mm².

The ground connection must be made for the bay. The bay must be connected to a strip of earth directly connected to the earth of the building.

Each panel must be connected to the bay ground collector by means of a separate conductor.

The Contractor must provide the technical data sheet for the brewing bay.

2.2.8. "RJ45" patch panel

"RJ45" patch panels will be sized to the 19 "standard for rack installation and will be 1U high.

They must be able to accommodate 24 RJ45 connectors and allow the automatic grounding of each connector.

They will have to allow the loading of the cables without excessive stress on each of the cables. A tie-down system is preferable.

Each connector slot will be indelibly numbered, whether it is empty or occupied, the slots not equipped with connectors will be provided with a removable shutter.

Each panel will be delivered empty and must be equipped on site with the exact number of connectors required.
The crimping of the modules that will equip the brewing panels, will be done without tools
The Contractor must provide the technical data sheet of the "RJ45" patch panels.

2.2.9. Horizontal cable routing

The grommets will be metallic and dimensioned according to the standard 19 inches. They must have at least 5 metal rings. They will be 1U high and 2U deep for patch panels up to 24 outlets. For patch panels with more than 24 outlets, they will be 2U high and 2U deep.

There will be at least one cable run per patch panel, the colour of the grommets must be coordinated with the colour of the panels.

The Contractor must provide the data sheet of the cable glands.

2.2.10. Data's "Copper" Patch cord: full IP

To achieve class E performance, patch cords will be certified at least category 6a according to ISO / IEC 11801

They will be of the same brand as that used for the constitution of the link "**permanent Link Class E**",

Each category 6a cord will be F / UTP type, consisting of 4 twisted pair single-strand impedance characteristic of 100 Ohms and will be equipped with an RJ45 connector over moulded at each end.

The outer sheath will preferably be white or grey in colour (in any case different from blue) and must be made of a material that does not produce toxic smoke in the event of fire and that has flame retardant properties in accordance with the IEC 60332 standard. -1 (sheath type LSOH).

The Contractor must provide the technical data sheet of the cords.

2.2.11. Network engineering rules

FS

The installation must be carried out according to the requirements of this S.T.S and following the rules of art.

2.2.11.1. Intermediate distribution cabinet

It will be chosen so that it can directly serve all the Ethernet outlets installed, respecting a maximum link length of 90 meters.

2.2.11.2. General characteristics of structured cabling

The cabling system put in place must be:

- ***Reconfigurable***: The configurations and topological reconfigurations to be carried out according to the networks must be able to be carried out quickly, economically and without structural modification of the wiring.
- ***Standardized***: Distribution cables, sockets and their connection conventions must be identical in all parts of the site, regardless of the topologies and types of networks to be supported.
- ***Universal***: The infrastructure is adaptable to the transport of all types of information (voice, data, images, etc.). To do this, its components must have transmission performance at least equal to that shown in the standard for all applications in the EA class.
- ***Backward Compatibility***: The cabling system will allow the use of lower grade equipment on higher grade cabling.

2.2.11.3. Technical recommendations concerning implementation

To guarantee the quality of the assembly and the performances of the cabling, the contractor will take care to respect:

- The length of the "copper" links that will be a maximum of 90 meters (from end to end of the link, excluding patch cords and service lines).
- Electromagnetic environment constraints
- Mechanical constraints. The cables will be laid and not pulled. The cables should not be subjected to excessive mechanical stress when installed, such as bending, pulling, or crushing.
- The minimum bending radius recommended by the manufacturer of "copper" cables during and after installation. In the absence of the manufacturer's recommendation, the minimum radius of curvature retained will be 8 times the outer diameter for the "copper" cable.
- The unsheathed cable length (less than 20 mm) and the twisted length (less than 13 mm). The connection will be made without tools or with the help of adequate tools, according to the manufacturer's recommendations.
- The tightening will be done manually so as not to crush the cables. The interval between two collars must be greater than 20 cm. It is requested to use reusable collars equipped with a hook and loop closure system to avoid damaging the cables. Plastic collars will be refused.
- Mass recovery between the connector and the cable that must be performed using the strap or braid 360 ° without the aid of the drain. Any mass recovery system using the drain will be refused.
- Patch panels that will be metal and connected to the rack mass in a safe manner using a suitable mass recovery system and not using the retaining screws.
- The system design and the path defined for the cable routing that will consider the limitations defined by the EN 50173 and EN 50174-2 standards in order to optimize the transmission performance.

2.2.11.4. The electromagnetic compatibility constraints

FS

Compliance with the following environmental constraints directly affects the performance of the cabling infrastructure.

The separation between the data cables and the power supply cables must be at least in accordance with EN 50174 part 2 in order to ensure the correct operation of the equipment.

It is requested to respect a minimum separation distance of:

- 12 cm with incandescent lights.
- 60 cm with fluorescent lights.
- 1 meter with sources of energy higher than 10 KVa.
- 2 meters with electric motors.
- 3 meters with high voltage lines or radiating sources in HF, VHF, UHF and SHF.

In case of parallel routing, the cables will be at least.

Length of the parallel path	**Source < 2KVA**	**Source from 2 to 5 KVA**	**Source > 5 KVA**	
3 m	10 mm	20 mm	40 mm	
5 m	15 mm	40 mm	80 mm	
10 m	30 mm	70 mm	140 mm	
15 m	50 mm	120 mm	240 mm	
20 m	60 mm	150 mm	300 mm	
> 30 m	120 mm	300 mm	600 mm	

Perpendicular crossing is allowed with the exception of crossing with fluorescent lights.

The proposed cabling system must comply with the electromagnetic compatibility requirements described in EN 50288 and ISO 11801 2nd edition, which states that the installed wiring must not in any way impair the proper functioning of the equipment connected to it. The contractor will have to guarantee this conformity.

2.2.11.5. Cable routing

Perpendicular crossing is allowed with the exception of crossing with fluorescent lights.

The proposed cabling system must comply with the electromagnetic compatibility requirements described in EN 50288 and ISO 11801 2nd edition, which states that the installed wiring must not in any way impair the proper functioning of the equipment connected to it. The contractor will have to guarantee this conformity.

2.2.11.6. Cable routes

The cables in Server Room will be laid and fixed in cable trays.

The laying of "weak current" cableways and / or the respect of the recommendations associated with them are the responsibility of the contractor of this lot.

Cable trays for weak power cables should not be shared with other resources. Horizontal cable trays must be made of perforated galvanized sheet metal of the "marine slab" type with no sharp edges, the vertical cable trays shall be made of welded steel wire or of the "marine slab" type.

All cable trays will be grounded in a continuous manner, by a bare copper conductor (unsheathed) of at least 16 mm² in section, flowing on the outer flange of the cable trays. This conductor will be fixed by uninsulated brass terminals at each change of section, direction and at least every 5 m, and by plastic collar to each meter.

FS

The fixing means of the cable trays must also be provided to support the excess weight generated by the possible extensions. The spacing between the fixings of the cable trays must guarantee the rigidity of the assembly, including the maximum weight that can be put in place.

All assembly and grounding accessories should be linked to the main grounding of the building as it is mandatory.

Cable trays in premises open to the public should be closed with a cover when visible.

An etched label marked "reserved V.D.I" will be placed at least every 5 meters on the cable tray.

For places where the installation of cable trays is not possible, the cables must be supported and protected by appropriate arrangements, validated by the Client.

2.2.11.7. Trunking

Trucking will be composed:

- A body or a rear part of lids
- Outside corners
- Interior angles
- Closing tips

In the case of works (high / low currents), the trunkings must be compartmentalized by partition walls provided for this purpose. This partition will separate computer logical cables from electrical ones.
Note: **electrical cables using the same routing as computer cables must be at least isolated at a voltage less than or equal to 1000V.**

- The trunking will be fixed to the walls using screws and dowels adapted to the support or by hardened steel points of type.
- Vertical descents from the false ceiling will be made by the same type of trunking.

2.2.11.8. Sheath

The cables should be protected in flexible ring sleeves (ICA / ICTA), particularly in the case of:

- the underground trenches,
- configuration preventing the installation of a cable tray or trunking,

Channels or corrugated sheaths shall be made of a material that does not produce smoke that is toxic in the event of fire and that has flame retardant properties.

The sheaths will be green.

The sleeves will be sized with a reserve of 30% free space.
An immovable label marked "reserved V.D.I" shall be placed at least every 5 meters on the sheath.

2.2.11.9. Identification and flagging of links

All links must be clearly marked on the connectors, modules and sockets from which they come and to which they lead.

The identification will be legible and indelible by immovable identification labels on the modules of brewing and on the outlets of workstations. The coding of the decision numbers is imposed by the client as follows:

- The bay will be identified by the letter (from A to G) followed by a dash
- Each patch panel will be identified by a roman figure from (I to X), starting from the top.
- Each plug of a patch panel will be identified by a two-digit number (01 to 24)
- For each outlet, the number is reminiscent of the bay letter, the patch panel letter, and the outlet number on the patch panel.

Example: The identification "**C-V18**" corresponds to socket 18 of panel fifth (V) of bay C.

FS

2.2.11.10. Organization of the ground network

The grounding of the cabling system must be carried out in accordance with the manufacturer's recommendations and the standards EN50303, EN50174-2 and TIA / EIA-607.

All the grounding in the building must be interconnected (mesh network, single and equipotential). A measurement of the grounding value of the building should be made to ensure its good quality.

2.2.11.11. Power for each 09U wall rack mount cabinet.

Each intermediate rack shall be powered by electrical connection to the central UPS from the server room in the main building.

This electrical connection will consist of an electrical cable of sufficient length to connect the rack power rail to the server room.
The cable will be rigid electric cable of U1000R02V – 1 x 2.5mm2.
The 19-inch Horizontal Rackmount PDU should be equipped by a circuit breaker.
From the central UPS, the electrical connection is made via a circuit breaker and should be a DT40, U+N, 16A - 300mA - Curve C.
The electrical cable will be laid out in a special conduit separated as much as possible from the data cables and will also have to be resistant or protected from rodents and bad weather.

2.3. Fire safety standards

Smoke emission (EN 50268, IEC 61034, NFC 20902, and NFC 32073)
Release of toxic and corrosive gases (IEC 60754.1, NF C 20454, EN 50267, IEC 60754.2, NFC3074, NFC 20453)
Absence of halon (NFC 32062).
The cabling system must also have fireproof properties according to the standards and decrees in force.
In general, safety standards must be met and respected and possibly readjusted with the legislation in force for Rwanda fire safety regulations.

Nota: This list is not exhaustive and the company responsible for the performance of the service must comply with all regulations that may appear before the start of work.

3. Technical acceptance.

The technical recipe is the operation that guarantees the project owner that the installation complies with:

- Present S.T.S
- Expected performance
- The standards in force
- The manufacturer's installation guide for obtaining the warranty
- The rules of art

The recipe has three levels of control:

- A visual check against the specifications
- Static electrical control
- A dynamic electrical control

The client must be notified of the verification and testing operations so that they can proceed in the presence of his representative.
The recipe document must include all the elements necessary for the management of the cabling (identification of the cables and plugs, respect of the environmental constraints and the rules of the art) as well as the result of the tests carried out (visual controls, electrical controls static and dynamic).

3.1. Tests

3.1.1. Structure Power Network installation

The tests and verifications to be carried out must be dynamic and conform to the IEC standard “Low-voltage electrical installations - Part 6: Verification”.
These tests and verifications consist of:

- Continuity of conductors
- Insulation resistance of the electrical installation
- Protection by SELV, PELV or by electrical separation
- Insulation resistance/impedance of floors and walls
- Protection by automatic disconnection of the supply
- Additional protection
- Polarity test
- Check of phase sequence
- Functional tests
- Verification of voltage drop

Given the importance of these tests and verifications, the contractor should indicate the most appropriate method for each test and should therefore provide the necessary equipment for each test. However, UNHCR reserves the right to impose an additional method or series of tests, at the expense of the contractor.

3.1.1.1. Integrated and structured Data Network using Category 6A - Class E VDI (Voice, Data and Images)

3.1.1.1.1. “Copper” Link test

All "copper" links shall be tested in "permanent Link class E" configuration in accordance with ISO / IEC 11801 Edition 2 or EIA / TIA 568B.21.
The test results must be higher than the values given by the standards in the "permanent Link class E" configuration in accordance with ISO / IEC 11801 Edition 2 or EIA / TIA 568B.21.
All of these tests will be performed using a Tier 3 or higher tester, in its latest software version at the time of testing, as defined by ISO / IEC 11801 Edition 2 and the EIA / TIA standard. 568B.21.
Each measurement sheet must include at least:

- The brand, type, serial number and software version of the hardware used.
- The date of the test.
- The mark, the reference and the nominal speed of propagation of the cable (N.V.P).
- The identification of the link.
- Assignment of pairs.
- The length of the pairs in meters.
- Impedance.
- The loop resistance.
- Insertion loss.
- The crosstalk.
- The TV crosstalk.
- The signal-to-noise ratio.
- Toss by reflection.
- The propagation delays.
- The propagation gaps.
- The graphs of the results

The copy of the calibration certificate or the proof of purchase of the tester for a device less than one year old, must accompany the test report.
The measuring heads of the device shall be of category 6. The purpose of the visual inspection is to verify that the wiring performed complies with the requirements of this specification regarding:

- The verification of the materials used.

FS

- Respect for environmental constraints.
- The routing of the cables.
- The implementation of the cables.
- The connection of the cables.
- Fixing elements (racks, panels, sockets, modules, supports, etc.).
- Tagging and tagging.
- The aesthetic aspect.

3.1.1.1.2. Static tests

The purpose of these tests is to verify that the connections are made correctly and that the cables have not been damaged during installation. It will be necessary to verify that:

- The length of each link does not exceed the maximum value of 90 meters imposed by the standard.
- Isolation between drivers is correct.
- The continuity between the conductors is correct.
- The order of connection of the conductors is compliant (control of the pairing).
- The detection of impedance breaks on the pairs is performed (by reflectometry).
- Grounding of the bays is done.

Each of the links will have to be checked.

4. Staff training and Maintenance

4.1. Staff training

The training of the persons designated by the contracting authority for the use of the facilities is part of the contract.
This training should take the necessary time for these people to be able to master the facilities and use know-how without assistance from the provider.

4.2. Maintenance contract

At the time of submission, the company will submit a draft contract for the maintenance services of the system. The Contractor must propose in his tender:

- Full maintenance of the facilities during the warranty period
- The performance of these services after the warranty period.

5. Control and reception

It is agreed that the client may carry out at any time any type of check to verify that the installation are made according to the requirements of this S.T.Sand the rules of the art. A complete inspection of the construction site area to be approved will be carried out and the conformity as well as the acceptance will only be validated by the main contractor.
At the end of the full visit, the decision (receipt with or without reservation or refusal of receipt) will be recorded in the minutes. This report will be signed by both parties.

5.1. Reception with reservations

If the minutes mention reservations motivated by omissions or imperfections, the contractor will have a deadline to be defined with the supervisor to carry out the requested work. The contractor will have to follow the imposed schedule, as from the day of the receipt of the minutes. After this period, the client may reserve the right to have the work carried out by another company, at the expense and risk of the defaulting contractor.

5.2. The entry in possession by the client

It is at the signing of the acceptance report with all the reservations raised that the UNHCR takes possession of the full installation and starts the warranty period.

6. Components and solution warranty

During the warranty period, the contractor or by default the manufacturer, is obliged to remedy any anomalies occurring on the newly installed installation, he will have to carry out his expenses (parts, labour and displacements), the control and the replacement of any defective element. If anomalies persist, the Client reserves the right to proceed, at the expense of the contractor and during the warranty period, to all tests that he deems necessary.
The contractor must certify that he possesses all the skills, know-how and qualified personnel in sufficient number to carry out the work.
At the end of the work, the contractor will provide the manufacturer's warranties in the proposed cabling solution. The installation must comply with all the installation technical specifications defined by the manufacturer of each product.

6.1. Definition

Cabling means a set of cabling components that are part of the building infrastructure in which they are installed and can only be removed or moved by preliminary work on the walls and partitions of the building in which they are installed. They refer in particular to vertical or horizontal distribution cables (copper or optic), distribution panels, terminal boxes and jacks, connectors and cords.
For the distribution, the contractor has the obligation to propose a chain of link of technical quality homogeneous, entailing the guarantee of a single manufacturer. His proposal must be based on a cabling system.

6.2. Components Warranty

The components must be guaranteed for a period of at least 10 years from the date of receipt of the installation. The labour for the removal and installation of each defective element must be guaranteed for a period identical to the warranty period of the components.

6.3. Applications Warranty

The applications guarantee will ensure that the installed wiring will support all existing and future applications in accordance with ISO / IEC 11801 standardization for a period of at least 10 years from the date of receipt of the installation.

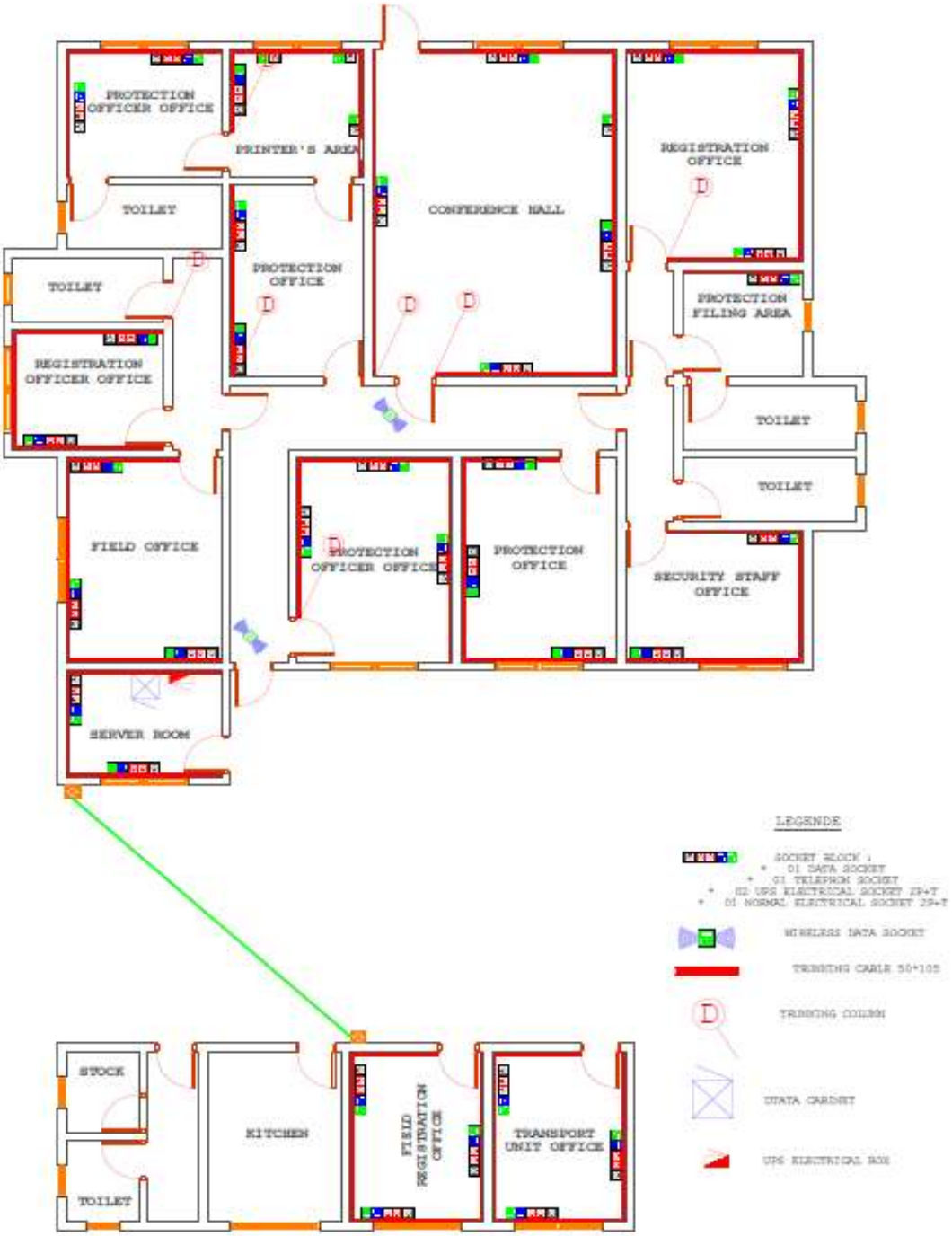
6.4. Decomposition of the Lump Global Amount (DLGA).

The Contractor must read carefully all the specifications and will present a Decomposition of the Lump Global Amount including at least the following items:

- Patch panel
- Data network Pre-wiring
- Cable routing by DLP Schneider or LeGrand trunking's
- Technical recipe.

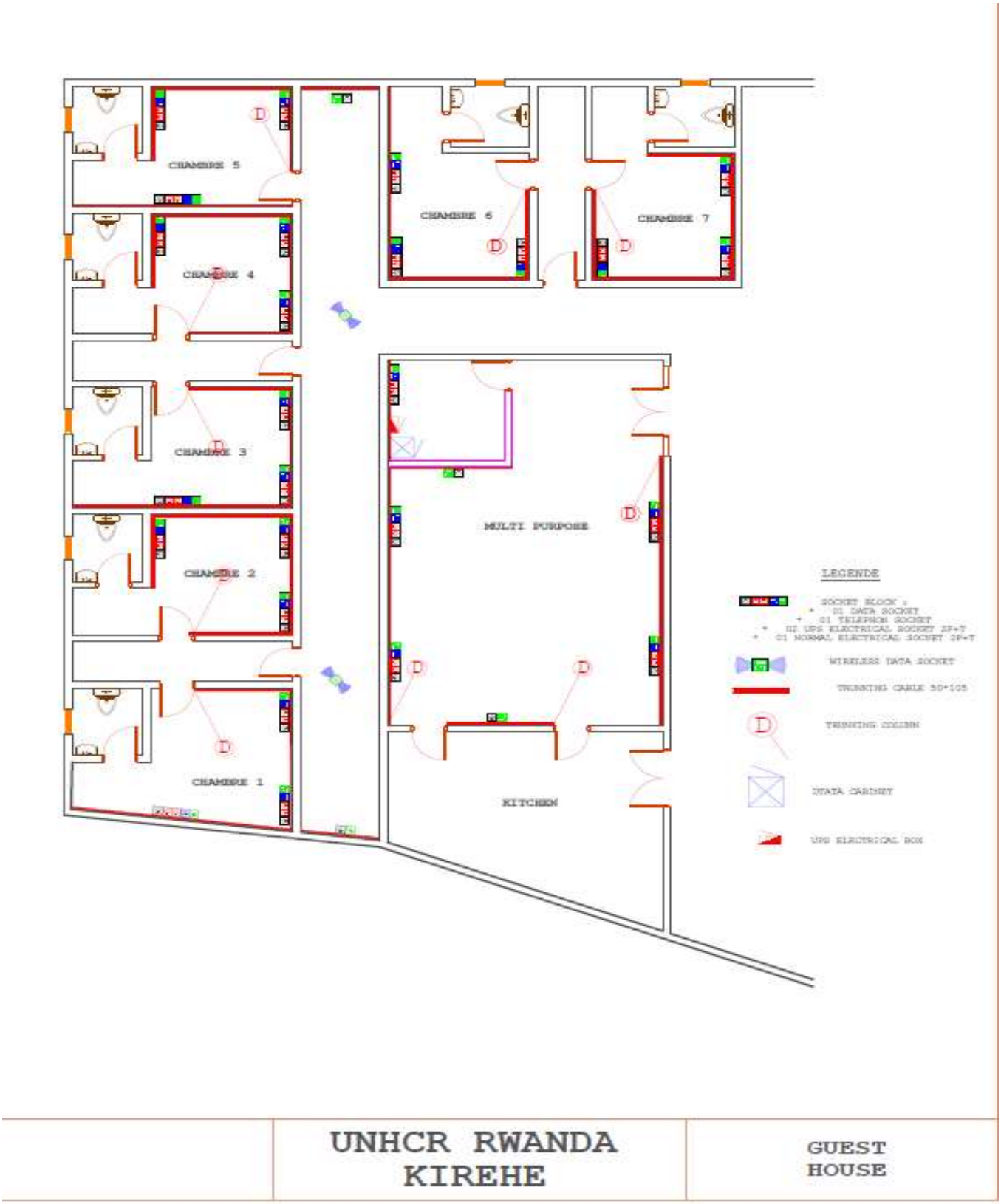
The Decomposition of the Lump Global Amount will be accompanied by an explanatory note of its solution and Table summarizing the references of the proposed equipment

ANNEX A CONT: Technical Drawings (Protection Office):



	UNHCR RWANDA KIREHE	PROTECTION OFFICE

ANNEX A CONT: Technical Drowings (Guest House):



ANNEX B: TECHNICAL OFFER FORM

NETWORK INSTALLATION BOTH IN THE OFFICE AND GUEST HOUSE AT UNHCR, SUB-OFFICE KIREHE

LOCATION: KIGINA SECTOR, KIREHE District

#	TECHNICAL EVALUATION CRITERIA POINTS	Max. Points obtainable
0	**Eligibility (minimum requirements, that a company must meet for evaluation)**	
	Site Visit and signed/stamped copy of UNHCR General Terms and Conditions for Provision of Goods and Services – (2018 version)[1]	**Mandatory**
	The bidding company must show proof of existence for the last three years by submitting Certificate of Domestic Company Registration from the Rwanda Development Board (RDB)	PASS/FAIL
	The bidding company should show tax compliance by providing a valid and current tax clearance certificate issued by RRA.	PASS/FAIL
	Work plan/Activities timetable and proper labelling planning. *Provision of detailed workplan and proper labelling plan 10 points, non-provision of detailed workplan and proper labelling plan 0 point.*	10
	Delivery deadlines [iii] provision of Project implementation Schedule, 5 points non-provision of detailed work plan 0 mark)	5
	General Experience of the firm/company and relevant Experience in undertaking similar projects with other companies / Organizations [iv]. *Provision of below 3 certificates 5 points; 3-5 completion certificates 10 points, 3-10 completion certificate 15 points.*	15
	Bill of Quantity and Technical specification of items to be used/presentation of technical drawing design *provision of BoQ according to requested specifications in ToR and presentation of technical drawing designs (annex A) 10 points, BOQ different from requested specification 0 point*	10
	Provision of dedicated team to the project and presentation of this team *Provision of 1-2 CVs 5 points* *Provision of 3 and above CVs relevant to the project 10 points*	10
	Warranty of achieved works *provision of written I year warranty (5 points)* *non-provision of warranty (0 point)* Staff training offer and after-sales services *(5 points)* *provision of training methodology (2 points)* *non-provision of training methodology (0 point)* *Provision of after sales certificate (3 points)* *Non provision of after sale certificate (0 point)*	10
		60.00
	Minimum Score to be for further financial analysis (40%)	**40.00**

FS

ANNEX C: BOQ/FINANCIAL OFFER FORM

RFP/009/ HCR/RWAKI/2021- NETWORK INSTALLATION BOTH IN THE OFFICE AND GUEST HOUSE AT UNHCR, SUB-OFFICE KIREHE

LOCATION: KIGINA SECTOR, KIREHE DISTRICT

LOCAL COMPUTER AND TELEPHONE NETWORK INFRASTRUCTURE OF UNHCR KIREHE SUB OFFICE						
Configuration of a workstation:		* 02 UPS Power socket 2P+T-16A				
		* 01 Normal Power socket 2P+T-16A				
		* 02 Data port RJ45				
ITEM	**DESCRIPTION**	**REF**	**UNIT**	**QTY**	**Unit Cost (RWF without VAT)**	**TOTAL COST (RWF without VAT)**
I - GUEST HOUSE:(52 DATA PORT RJ45, 02 ACCESS POINT AND 04 NETWORK PRINTERS)						
1	Linkeo2 Rack 19" 42U 2026*800*1000mm of Legrand or equivalent	LEG 646765	Pcs	1		
2	Brush panel 1U Legrand or equivalent	LEG 046528	Pcs	15		
3	Electrical rackable PDU 9*2P+T 16A 1U Legrand or equivalent	LEG 046550	Pcs	1		
4	Patch Cord Cat6 FTP - 1 meter Legrand or équivalent	LEG 051762	Pcs	58		
5	Patch Cord Cat6 FTP - 3 meter Legrand or équivalent	LEG 051764	Pcs	56		
6	24 Port patch panels 1U RJ45 Cat6 FTP Legrand or équivalent	LEG 033562	Pcs	3		
7	Data socket RJ45 mosaic 45 FTP Cat6 02 modules Legrand	LEG 076565	Pcs	58		
8	Data cable Cat6 FTP en carton of 305-meter Legrand or equivalent	LEG 032756	Box	10		
9	Mosaic support 45 06 modules for plastic trunking 50*105 of Legrand lid width 85mm	LEG 010996	Pcs	26		
10	Mosaic support 45 04 modules for plastic trunking 50*105 of Legrand lid width 85mm	LEG 010994	Pcs	30		
11	Plastic trunking 50*105 of Legrand lid width 85mm	LEG 010464	Pcs	60		

FS

12	Variable flat angle for 50*105 trunking of Legrand	LEG 010785	Pcs	11		
13	Variable inside angle for 50*105 trunking of Legrand	LEG 010602	Pcs	20		
14	Variable Outside angle 50*105 Legrand trunking	LEG 010622	Pcs	3		
15	End cap for 50*105 Legrand trunking	LEG 010702	Pcs	30		
16	Accessories (screws, plastic dowel, cage nuts, and clamps)	-	Ens	1		
SUB TOTAL I:						
II - GUEST HOUSE: NORMAL AND UPS ELECTRICAL DISTRIBUTION OF 52 UPS POWER SOCKET AND 28 NORMAL POWER SOCKETS						
17	Ekinoxe electrical distribution box 03 rows of 13 modules IP30 IK05 + earth terminal	LEG 001213	Pcs	1		
18	Transparent door for 03 rows of 13 modules enclosure	LEG 001343	Pcs	1		
19	Ekinoxe electrical distribution box 02 rows of 13 modules IP30 IK05 + earth terminal	LEG 001212	Pcs	1		
20	Transparent door for 02 rows of 13 modules enclosure	LEG 001342	Pcs	1		
21	iC60N 40A-4P Three-phase UPS network main circuit breaker C curve	A9F77420	Pcs	2		
22	iC60N 20A-4P Three-phase surge arrester disconnection circuit breaker C curve	A9F94420	Pcs	1		
23	Four-pole 1,2kV - 20kA surge arrester	A9L20600	Pcs	1		
24	100A four-pole distributor - 4*7 terminal	LGY410028	Pcs	2		
25	Différentiel circuit breaker DT40 Uni+Neutral 16A - 6KA - 300mA - C curve	A9N21445	Pcs	8		
26	Red UPS coded electrical socket 2P+Earth - 10/16A - 250V	LEG 077114	Pcs	52		
27	Coding for plug and socket 2P+T	LEG 050299	Pcs	52		
28	White electrical socket 2P+Earth - 10/16A - 250V	LEG 077111	Pcs	28		
29	Electrical cable U1000RO2V 3x2.5mm^2 100m roll	RO2V3G2,5	Pcs	7		

FS

30	Electrical earth of the building of 10Ohm value enriched with salt and coal. Made up of :(03 copper stakes of 02 meters and bare copper with a 25mm2 of 20m)	-	Lumpsum	1		
SUB TOTAL II:						
III - PROGRAM OFFICE:(58 DATA PORT RJ45, 02 ACCESS POINT AND 04 NETWORK PRINTERS)						
1	Linkeo2 Rack 19" 42U 2026*800*1000mm of Legrand or equivalent	LEG 646765	Pcs	PM		
2	Brush panel 1U Legrand or equivalent	LEG 046528	Pcs	15		
3	Electrical rackable PDU 9*2P+T 16A 1U Legrand or equivalent	LEG 046550	Pcs	1		
4	Patch Cord Cat6 FTP - 1 meter Legrand or équivalent	LEG 051762	Pcs	64		
5	Patch Cord Cat6 FTP - 3 meter Legrand or équivalent	LEG 051764	Pcs	62		
6	24 Port patch panels 1U RJ45 Cat6 FTP Legrand or équivalent	LEG 033562	Pcs	3		
7	Data socket RJ45 mosaic 45 FTP Cat6 02 modules Legrand	LEG 076565	Pcs	64		
8	Data cable Cat6 FTP en carton of 305 meter Legrand or equivalent	LEG 032756	Box	10		
9	Mosaic support 45 06 modules for plastic trunking 50*105 of Legrand lid width 85mm	LEG 010996	Pcs	29		
10	Mosaic support 45 04 modules for plastic trunking 50*105 of Legrand lid width 85mm	LEG 010994	Pcs	31		
11	Plastic trunking 50*105 of Legrand lid width 85mm	LEG 010464	Pcs	75		
12	Variable flat angle for 50*105 trunking of Legrand	LEG 010785	Pcs	16		
13	Variable inside angle for 50*105 trunking of Legrand	LEG 010602	Pcs	30		
14	Variable Outside angle 50*105 Legrand trunking	LEG 010622	Pcs	10		
15	End cap for 50*105 Legrand trunking	LEG 010702	Pcs	35		
16	Accessories (screws, plastic dowel, cage nuts, and clamps)	-	Ens	1		
SUB TOTAL III:						

IV - PROGRAM OFFICE: NORMAL AND UPS ELECTRICAL DISTRIBUTION OF 58 UPS POWER SOCKET AND 31 NORMAL POWER SOCKETS						
17	Ekinoxe electrical distribution box 04 rows of 13 modules IP30 IK05 + earth terminal	LEG 001214	Pcs	1		
18	Transparent door for 04 rows of 13 modules enclosure	LEG 001344	Pcs	1		
19	Ekinoxe electrical distribution box 02 rows of 13 modules IP30 IK05 + earth terminal	LEG 001212	Pcs	1		
20	Transparent door for 02 rows of 13 modules enclosure	LEG 001342	Pcs	1		
21	iC60N 40A-4P Three-phase UPS network main circuit breaker C curve	A9F77420	Pcs	4		
22	iC60N 20A-4P Three-phase surge arrester disconnection circuit breaker C curve	A9F94420	Pcs	1		
23	Four-pole 1,2kV - 20kA surge arrester	A9L20600	Pcs	1		
24	100A four-pole distributor - 4*7 terminal	LGY410028	Pcs	2		
25	Différentiel circuit breaker DT40 Uni+Neutral 16A - 6KA - 300mA - C curve	A9N21445	Pcs	8		
26	Red UPS coded electrical socket 2P+Earth - 10/16A - 250V	LEG 077114	Pcs	58		
27	Coding for plug and socket 2P+T	LEG 050299	Pcs	58		
28	White electrical socket 2P+Earth - 10/16A - 250V	LEG 077111	Pcs	31		
29	Electrical cable U1000RO2V 3x2.5mm^2 100m roll	RO2V3G2,5	Pcs	9		
30	Electrical earth of the building of 10Ohm value enriched with salt and coal. Made up of :(03 copper stakes of 02 meters and bare copper with a 25mm2 of 20m)	-	Lumpsum	1		
SUB TOTAL IV:						
V - PROTECTION OFFICE:(68 DATA PORT RJ45, 02 ACCESS POINT AND 04 NETWORK PRINTERS)						
1	Linkeo2 Rack 19" 42U 2026*800*1000mm of Legrand or equivalent	LEG 646765	Pcs	1		
2	Brush panel 1U Legrand or equivalent	LEG 046528	Pcs	15		

FS

3	Electrical rackable PDU 9*2P+T 16A 1U Legrand or equivalent	LEG 046550	Pcs	1		
4	Patch Cord Cat6 FTP - 1 meter Legrand or équivalent	LEG 051762	Pcs	74		
5	Patch Cord Cat6 FTP - 3-meter Legrand or equivalent	LEG 051764	Pcs	72		
6	24 Port patch panels 1U RJ45 Cat6 FTP Legrand or equivalent	LEG 033562	Pcs	4		
7	Data socket RJ45 mosaic 45 FTP Cat6 02 modules Legrand	LEG 076565	Pcs	74		
8	Data cable Cat6 FTP en carton of 305-meter Legrand or equivalent	LEG 032756	Box	12		
9	Mosaic support 45 06 modules for plastic trunking 50*105 of Legrand lid width 85mm	LEG 010996	Pcs	34		
10	Mosaic support 45 04 modules for plastic trunking 50*105 of Legrand lid width 85mm	LEG 010994	Pcs	36		
11	Plastic trunking 50*105 of Legrand lid width 85mm	LEG 010464	Pcs	90		
12	Variable flat angle for 50*105 trunking of Legrand	LEG 010785	Pcs	18		
13	Variable inside angle for 50*105 trunking of Legrand	LEG 010602	Pcs	36		
14	Variable Outside angle 50*105 Legrand trunking	LEG 010622	Pcs	9		
15	End cap for 50*105 Legrand trunking	LEG 010702	Pcs	40		
16	Accessories (screws, plastic dowel, cage nuts, and clamps)	-	Ens	1		
SUB TOTAL V:						
VI - PROTECTION OFFICE: NORMAL AND UPS ELECTRICAL DISTRIBUTION OF 68 UPS POWER SOCKET AND 36 NORMAL POWER SOCKET						
17	Ekinoxe electrical distribution box 04 rows of 13 modules IP30 IK05 + earth terminal	LEG 001214	Pcs	1		
18	Transparent door for 04 rows of 13 modules enclosure	LEG 001344	Pcs	1		
19	Ekinoxe electrical distribution box 02 rows of 13 modules IP30 IK05 + earth terminal	LEG 001212	Pcs	1		

FS

20	Transparent door for 02 rows of 13 modules enclosure	LEG 001342	Pcs	1		
21	iC60N 40A-4P Three-phase UPS network main circuit breaker C curve	A9F77420	Pcs	2		
22	iC60N 20A-4P Three-phase surge arrester disconnection circuit breaker C curve	A9F94420	Pcs	1		
23	Four-pole 1,2kV - 20kA surge arrester	A9L20600	Pcs	1		
24	100A four-pole distributor - 4*7 terminal	LGY410028	Pcs	2		
25	Differential circuit breaker DT40 Uni+Neutral 16A - 6KA - 300mA - C curve	A9N21445	Pcs	8		
26	Red UPS coded electrical socket 2P+Earth - 10/16A - 250V	LEG 077114	Pcs	68		
27	Coding for plug and socket 2P+T	LEG 050299	Pcs	68		
28	White electrical socket 2P+Earth - 10/16A - 250V	LEG 077111	Pcs	36		
29	Electrical cable U1000RO2V 3x2.5mm^2 100m roll	RO2V3G2,5	Pcs	11		
30	Electrical earth of the building of 10Ohm value enriched with salt and coal. Made up of :(03 copper stakes of 02 meters and bare copper with a 25mm2 of 20m)	-	Lumpsum	1		
SUB TOTAL VI:						
VII - FIBER OPTIQUE AND UPS ELECTRICAL INTERCONNECTION OF BUILDINGS						
30	19" OPTICAL DRAWER LC2 EQUIPPED WITH 04 BLOCKS SC 1U	LEG 033509	Pcs	3		
31	Heat-shrinkable protective sleeves for 60mm optical fibers	-	Pcs	24		
32	Pigtail OM3 LCS3 SC CONNECTOR - Length 1m - LSZH	LEG 032220	Pcs	24		
33	Analysis report and reflectometry test with 02 wavelength 1330 and 1550	-	Pcs	24		
34	LCS3 Multimode tight structure OM3 50/125 optical cable for indoor or outdoor 06fibers	LEG 032510	M	200		
35	Multimode OM3 50/125 Duplex SC/SC patch cable, length:2m	LEG 032610	Pcs	5		
36	Convertisseur FO/RJ45 100/1000Mbps	-	Pcs	6		
37	Electrical cable U1000RO2V5G16mm2	RO2V5G16	M	200		

38	ICTA standard diam: 63mm conduit for high current with wire pullers	LEG 06663	Roll	3		
39	Green warning mesh width 300mm, rool of 100m	-	Roll	3		
40	Construction of 30*50*3000cm trench with a ramblais of fine sand	-	lumpsum	200		
41	Accessories (screws, plastic dowel, cage nuts, and clamps)	-	lumpsum	1		
SUB TOTAL VII:						
TOTAL WITHOUT VAT-RWF (I, II, III, IV, V, VI, VII)						
48 Ports Switch PoE (to be supplied by UNHCR)						
Access Points (to be supplied by UNHCR)						

PRICE QUOTED MUST BE EXCLUSIVE OF VAT

DATE: _____

NAME: _____

SIGNATURE: _____

IN THE CAPACITY OF: _____

DULY AUTHORIZED TO: _____

SIGNED BID FOR AND ON BEHALF OF: _____

OFFICIAL STAMP

FS