TERMS OF REFERENCE

ELECTRICAL AUDIT OF ELECTRICAL SYSTEM IN THE DOST-ASTI BUILDING

1. GENERAL OVERVIEW

1.1. The DOST-ASTI is seeking qualified and competent consultant for one (1) lot Electrical Audit of Electrical System in DOST-ASTI Building. The qualified consultant will also assist and provide the end-user with suggestions and recommendations for the development and improvement of the electric power system of the Agency. The consultant will provide a core team of experienced and competent technical personnel.

1.2. There is a need to hire a consultant to perform electrical audit and determine the most suitable and economical rehabilitation and/or restoration solutions in accordance with the latest Philippine Electrical Code (PEC) and National Building Code (NBC); and to prepare and submit existing electrical as-built plans/as-found plans and proposed electrical plans, electric power system documents, construction cost estimates, and project schedule for the works.

2. APPROVED BUDGET FOR THE CONTRACT

2.1. The total Approved Budget for the Contract (ABC) for this procurement is Nine Hundred Eighty Thousand Pesos (₱980,000.00), inclusive of all government taxes and other charges.

3. DELIVERY AND PROJECT DURATION

3.1. The project duration covering the Electrical Audit shall be for a period of thirty (30) calendar days upon the issuance of Notice to Proceed.

3.2. The CONSULTANT shall provide a Work Plan shown in Gantt Chart for a schedule of activities and deliveries.

3.3. Any request for delivery and time extension shall be for valid reasons or of unforeseen circumstances subject to approval, in writing, by DOST-ASTI. Work will be scheduled on or after office hours, and during weekends, and/or holidays duly approved by the end.

4. OBSERVATION

4.1. For the past several years, DOST-ASTI's electric power system has not been enhanced and modernized, it is now prone to electrical hazards like overloading, insulation breakdown, and even fire hazard. Taking into consideration the existing electrical load consumption and balancing, as a result of additional office equipment, devices, and appliances such as computers, air-conditioning units, and the Server Rooms, DOST-ASTI's electrical loading and cabling system need to be assessed for the safety of its personnel and property.

4.2. Observed defects and shortcomings:

4.2.1. Deteriorated electrical power system;

4.2.2. Old and malfunctioning of electrical equipment such as panel boards, and circuit breakers;

4.2.3. Brittleness of electrical wires and cables that could probably affect not

only the power supply of every building but also the everyday work and performance of the personnel; and

4.2.4. Lack of safety electrical devices and equipment such as grounding system, tagging, etc.

4.3. To address the above-mentioned defects and shortcomings, DOST-ASTI is planning to rehabilitate and/or restore the existing DOST-ASTI electric power system. The objective of the rehabilitation and/or restoration is to ensure the life safety of its personnel and continuity of its business. In line with this, DOST-ASTI intends to engage the services of a consulting firm for the audit, assessment, investigation, and evaluation necessary for the development and improvement of suitable rehabilitation and/or restoration work.

5. QUALIFICATIONS

5.1. The CONSULTANT must have at least five (5) years of similar and/or relevant experience related to this Terms of Reference, reckoned from the date of registration with the Department of Trade and Industry (DTI) for sole proprietorships; Securities and Exchange Commission (SEC) for corporations and partnerships; or Cooperative Development Authority (CDA) for cooperatives.

5.2. The CONSULTANT must have completed at least two (2) similar and/or relevant projects in the last three (3) years.

5.3. The CONSULTANT shall provide key staff for the following positions on a full-time or part-time basis on site:

5.3.1. Professional Electrical Engineer – One (1) Full time or Part time

5.3.2. Registered Electrical Engineer – One (1) Full time

5.3.3. Registered Master Electrician – One (1) Full time

5.3.4. Certified Safety Officer – One (1) Full time

5.4. The CONSULTANT Principal or Managing Officer must have at least three (3) years' experience in similar or related work to the project. The Principal or Managing Officer must be a Professional Electrical Engineer (PEE) with a valid license.

5.5. The Project-In-Charge (PIC) shall serve as the representative of the CONSULTANT. All communications with the CONSULTANT shall be through the PIC. The PIC must have at least three (3) years' experience in similar or related work to the project. The PIC must be at least a Registered Electrical Engineer (REE) with a valid license.

5.6. The CONSULTANT must have a Registered Master Electrician (RME) with at least three (3) years' experience in similar or related work to the project and a valid license.

5.7. The CONSULTANT must have a Certified Safety Officer (CSO) with at least three (3) years' experience in similar or related work to the project and a valid Certification as Safety Officer.

6. SCOPE OR WORKS

6.1. The Consultant shall undertake a thorough inspection, investigation, and various testing to assess the current actual condition and electrical integrity of DOST-ASTI.

6.2. Prepare Detailed As-Built Electrical Plan. (Consultant shall trace and identify the location and route of conduit, size of wires and other pertinent data of the existing

electrical system of all the buildings involved herein.)

6.3. The Consultant shall note and consider defects such as corroded materials, shorts, open and grounded connections and which shall be photographed and indicated on plans and elevation drawings showing their location.

6.3.1. The Consultant shall conduct:

6.3.1.1. Thermo Graphic Scanning

6.3.1.2. Insulation resistance test of existing feeder and feeder lines

6.3.1.3. Inspect and evaluate wires, circuit breakers, lugs and busways, outlet and lights.

6.4. The Consultant shall prepare calculations using gathered field data or the use of software to determine the Load Flow Studies, Short Circuit Studies and Protective Device Coordination Study. This shall be based on the latest edition of the Philippine Electrical Code, relevant NFPA Code and Energy Efficiency and Conservation Laws and applicable laws.

6.4.1. Parameters to be recorded and analyze:

6.4.1.1. Voltage per phase

6.4.1.2. Current per phase

6.4.1.3. Total Power (KW, KVA & KVAR)

6.4.1.4. Total Energy in Every 24 Hours for 1 whole week

6.4.1.5. Total Power Factor

6.4.1.6. Harmonic Profiles

6.4.1.7. Sag and Swell Voltages

6.4.1.8. Voltage Unbalance

6.4.1.9. Check or perform Load Distribution and Capacity

6.5. The Consultant shall prepare a comprehensive Electrical Investigation Report/ Recommendation containing the description of the status of DOST-ASTI, as a result of the investigation and the corresponding assessment/review and recommendation of necessary electrical engineering works.

6.6. The Consultant shall prepare, from approved schematic design studies and the design development documents. This includes plans, and other drawings, as well as outline specifications to fix and illustrate the size and character of the project and its essentials.

6.7. The Consultant shall assist the DOST-ASTI in preparing bidding plans/requirements for the works infrastructure project and construction plans.

7. DELIVERABLES

7.1. The CONSULTANT shall submit the resume and copies of licenses of all the staff as may be applicable, to be nominated in the project for review and approval by the DOST-ASTI end-user.

7.2. The CONSULTANT shall submit the following documents:

7.2.1. As-found / As-built electrical plans.

7.2.2. Final report of the comprehensive audit, assessment, and investigation of electrical findings and evaluation for the safety of its personnel and property which include hazard reports.

7.2.3. Scope of Works / Project Methodology for the proposed plan for the rehabilitation of electrical system of DOST-ASTI.

7.2.4. Detailed proposed electrical plans and drawings for the proposed

rehabilitation and replacement of various electrical equipment and devices.

7.2.5. Bill of Quantities (BOQ) for the proposed replacement of various electrical equipment and devices. Provide Technical Specification and/or brochure for each item.

7.2.6. Three (3) sets of the completed electrical plans and drawings and plans in A1 size blueprints and tracing paper signed and sealed by a duly licensed Professional Electrical Engineer (PEE) listed and certified by the DOLE's Bureau of Working Condition (BWC), plus three (3) sets of a flash drive containing the softcopy of the drawings and documents in AutoCAD and word/excel formats, respectively.

8. PAYMENT TERMS

8.1. Advance Payment for Mobilization

8.1.1. DOST-ASTI may allow advance payment not to exceed fifteen percent (15%) of the contract amount as mobilization cost, subject to the submission of irrevocable standby letter of credit or bank guarantee or surety bond.

8.2. Payment for the remaining contract amount shall be processed only upon submission of all deliverables and certification/acceptance by the End-user that the services are rendered in accordance with the terms of this Contract and are inspected and accepted.

9. LIQUIDATED DAMAGES

9.1. Failure to comply with the terms and conditions of the contract will result in the payment of corresponding penalties/liquidated damages in the amount to 1/10 of 1% of the cost of the unperformed portion for every day of delay. Once the cumulative number of liquidated damages reaches 10% of the amount of the contract, DOST-DOST-ASTI shall rescind the contract, without prejudice to other courses of action and remedies open to it.