

# NEPAL ELECTRICITY AUTHORITY

(An Undertaking of Government of Nepal)

**TRANSMISSION DIRECTORATE**

**GRID OPERATION DEPARTMENT**



## **BID DOCUMENT**

### **INTERNATIONAL COMPETITIVE BIDDING (ICB)**

**(SINGLE STAGE TWO ENVELOPE BIDDING PROCEDURE)**

### **VOLUME –I OF III**

**SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING  
OF  
POWER TRANSFORMERS AT VARIOUS  
SUBSTATIONS**

**TENDER NO: [GOD/2078/079-14](#)**

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*APRIL 2022*

# Table of Contents - Summary Description

## PART I BIDDING PROCEDURES

### **Section 1 - Instructions to Bidders (ITB)----- 1-1**

This Section specifies the procedures by Bidders in the preparation and submission of their Bids following a Single-Stage, Two-Envelope bidding procedure. Information is also provided on the submission, opening, and evaluation of bids and on the award of contract.

### **Section 2 - Bid Data Sheet (BDS) ----- 2-1**

This Section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section 1 - Instructions to Bidders.

### **Section 3 - Evaluation and Qualification Criteria (EQC) ----- 3-1**

This Section contains the bid evaluation criteria to determine the lowest evaluated bid and specifies the necessary qualifications of Bidders.

### **Section 4 - Bidding Forms (BDF) ----- 4-1**

This Section contains the forms which are to be completed by the Bidder and submitted as part of its Bid.

### **Section 5 - Eligible Countries (ELC) ----- 5-1**

This Section contains the list of eligible countries.

## PART II REQUIREMENTS

### **Section 6 - Employer's Requirements (ERQ) ----- 6-1**

This Section contains the Scope of Supply of Plant and Services, Specifications, the Drawings, and Supplementary Information that describe the plant and services to be procured, Personnel Requirements, Equipment Requirements, Certificates, and Change Orders.

## PART III CONDITIONS OF CONTRACT AND CONTRACT FORMS

### **Section 7 - General Conditions of Contract (GCC) ----- 7-1**

This Section contains the general clauses to be applied in all contracts. These Conditions are subject to the variations and additions set out in Section 8 (Special Conditions of Contract).

### **Section 8 - Special Conditions of Contract (SCC) ----- 8-1**

This Section contains provisions that are specific to each contract and that modify or supplement the GCC. Whenever there is a conflict, the provisions herein shall prevail over those in the GCC. The clause number of the SCC is the corresponding clause number of the GCC.

### **Section 9 - Contract Forms (COF)----- 9-1**

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

## Abbreviations

|            |                                       |
|------------|---------------------------------------|
| BD .....   | Bidding Document                      |
| BDF.....   | Bidding Forms                         |
| BDS.....   | Bid Data Sheet                        |
| BOQ .....  | Bill of Quantities                    |
| COF .....  | Contract Forms                        |
| DP .....   | Development Partners                  |
| ELI .....  | Eligibility                           |
| EQC .....  | Evaluation and Qualification Criteria |
| EXP .....  | Experience                            |
| FIN .....  | Financial                             |
| GCC .....  | General Conditions of Contract        |
| GoN .....  | Government of Nepal                   |
| ICB .....  | International Competitive Bidding     |
| ICC.....   | International Chamber of Commerce     |
| ITB .....  | Instructions to Bidders               |
| JV .....   | Joint Venture                         |
| LIT .....  | Litigation                            |
| NCB .....  | National Competitive Bidding          |
| NEA.....   | Nepal Electricity Authority           |
| PAN .....  | Permanent Account Number              |
| PPA .....  | Public Procurement Act                |
| PPMO ..... | Public Procurement Monitoring Office  |
| PPR .....  | Public Procurement Regulations        |
| PL .....   | Profit and Loss                       |
| SBD.....   | Standard Bidding Document             |
| SCC .....  | Special Conditions of Contract        |
| TS.....    | Technical Specifications              |
| VAT .....  | Value Added Tax                       |
| ERQ .....  | Employer's Requirements               |

**Nepal Electricity Authority**  
Transmission Directorate  
**Grid Operation Department**  
**Invitation for Bids (ICB)**

First Date of publication: 21<sup>st</sup> April 2022

*Invitation for Bids for the "Procurement of Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations"*

Contract Identification No: GOD/2078/079-14

1. Nepal Electricity Authority (NEA) has received a fund from Government of Nepal (GoN) towards the cost of *Grid Substation Capacity Increment Project* and intends to apply part of the funds to cover eligible payments under the Contract for *Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations, IFB No: GOD/2078/079-14*. Bidding is open to all eligible Nepalese and Foreign Bidders.
2. Nepal Electricity Authority (NEA) invites electronic bids from eligible bidders for the *Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations*, under International Competitive Bidding – Single-Stage, Two Envelope Bidding procedures.

Only eligible bidders with the following key qualifications should participate in this bidding:

1. Minimum Average Annual Turnover of within the best three years out of last ten fiscal years: **9.61 MUSD**
2. Required bid capacity of the bidder should be equal to or more than the **12.81 MUSD**
3. Minimum Work experience of similar size and nature that must have executed within last ten (10) years:
  - i. At least 1 (one) **EPC/Turnkey/ DB** Contract of similar size and nature, each with a value of at least **5.12 MUSD**.
  - ii. Minimum **3 nos. of Power Transformer of 100 MVA Three Phase 110 kV or higher capacity at higher voltage level**.

Detailed qualification criteria of the bidder, sub-vendors (manufacturers) and construction period are more elaborately described in the bidding documents. The contract duration is **Twenty Four (24) months** from the date of contract effectiveness.

3. Under the Single Stage, Two Envelope Procedure, Bidders are required to submit the Technical Bid and the Price Bid, as per the provision of ITB 21 of the Bidding Document.
4. Interested Eligible Bidders may obtain further information and inspect the Bidding Documents at the address given below during office hours Sunday through Friday.

The Director  
Grid Operation Department  
Nepal Electricity Authority  
Minbhawan, Kathmandu  
Phone: + 977 (01) 4106919, 4106782, 4106965  
Email: gridoperation@nea.org.np



or may visit PPMO website [www.bolpatra.gov.np/egp](http://www.bolpatra.gov.np/egp).

Complete bidding documents are also posted on the NEA website [www.nea.org.np](http://www.nea.org.np) for viewing/inspection only.

5. Bidding Documents is available online and can be downloaded from e-GP system: <https://bolpatra.gov.np/egp>. Interested bidders shall register in the e-GP system and deposit the non-refundable fee of **NPR 20,000.00 (In words, Nepalese Rupees Twenty Thousand only)** for bidding document in the following Bank.

Name of the Bank: **Kumari Bank Limited, Putalisadak, Kathmandu**

Name of the account: **NEA Transmission Directorate**

Account Number: **0010002263400001**

6. Pre-bid meeting shall be held at **Grid Operation Department, Minbhawan, Kathmandu, Nepal at 12:00 noon on, 12<sup>th</sup> May 2022** to clarify to the bidders the exact scope of the work, the basic data available and other issues in accordance with relevant clause of the bidding documents. Further the Bidders are strongly advised to visit the site to acquaint themselves with terrain conditions and associated details of the locations of the **substations** before the submission of Bids.
7. Bids must be submitted electronically through PPMO website [www.bolpatra.gov.np](http://www.bolpatra.gov.np) on or before **12:00 noon on date 10<sup>th</sup> June 2022**. There is no provision for hard copy submission.
8. The bids will be opened in the presence of Bidders representatives who choose to attend at **13:00 Hrs. NST on 10<sup>th</sup> June 2022** at the project office address given below. Bids must be valid for a period of **120 days** after bid opening and must be accompanied by a bid security or scanned copy of the bid security in pdf format in case of e-bid, amounting to a minimum of **USD 367,377.00** or an equivalent amount in NPR @exchange rate of Nepal Rastra Bank 30 Days prior to the Deadline for Bid Submission, which shall be valid for 30 days beyond the validity period of the bid.
9. If the last date of purchasing and /or submission falls on a government holiday, then the next working day shall be considered as the last date. In such case the validity period of the bid security shall remain the same as specified for the original last date of bid submission.
10. In the case of discrepancies or error in bid documents, bid notice or any other document, NEA reserves the right to amend and correct at any time.
11. After the completion of evaluation of Technical Bid for substantial responsiveness, substantially responsive bidders will be invited to attend the opening of Price Bids. The date, time and location of opening of Price Bid shall be notified in writing and/or published in **national daily**.
12. The contract will be awarded to the Bidder whose offer has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Documents.



13. The bidder shall bear all costs associated with the preparation and submission of its bid, and NEA will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.
14. NEA reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to award of contract, without thereby incurring any liability to the affected bidder(s) or any obligation to inform the affected bidder(s) of the grounds for NEA's action.
15. The office address of the Employer:

Grid Operation Department  
Nepal Electricity Authority  
Minbhawan, Kathmandu  
Phone: + 977 (01) 4106919, 4106782, 4106965  
Email: [gridoperation@nea.org.np](mailto:gridoperation@nea.org.np)

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# Section 1 - Instructions to Bidders

## Table of Contents

|           |  |           |
|-----------|--|-----------|
| <b>A.</b> | <b>General.....</b>  | <b>3</b>  |
| 1.        | Scope of Bid .....   | 3         |
| 2.        | Source of Funds .....  | 3         |
| 3.        | Fraud and Corruption.....  | 3         |
| 4.        | Eligible Bidders.....  | 5         |
| 5.        | Eligible Plant and Services .....                                    | 7         |
| <b>B.</b> | <b>Contents of Bidding Document.....</b>                             | <b>7</b>  |
| 6.        | Sections of Bidding Document.....                                    | 7         |
| 7.        | Clarification of Bidding Document, Site Visit, Pre-Bid Meeting ..... | 8         |
| 8.        | Amendment of Bidding Document .....                                  | 8         |
| <b>C.</b> | <b>Preparation of Bids.....</b>                                      | <b>9</b>  |
| 9.        | Cost of Bidding .....  | 9         |
| 10.       | Language of Bid .....  | 9         |
| 11.       | Documents Comprising the Bid .....                                   | 9         |
| 12.       | Letter of Bid and Schedules.....                                     | 10        |
| 13.       | Alternative Bids.....  | 10        |
| 14.       | Bid Prices and Discounts.....  | 10        |
| 15.       | Currencies of Bid and Payment .....                                  | 11        |
| 16.       | Documents Comprising the Technical Proposal.....                     | 12        |
| 17.       | Documents Establishing the Qualifications of the Bidder .....        | 12        |
| 18.       | Period of Validity of Bids.....                                      | 12        |
| 19.       | Bid Security .....   | 12        |
| 20.       | Format and Signing of Bid .....                                      | 13        |
| <b>D.</b> | <b>Submission and Opening of Bids .....</b>                          | <b>14</b> |
| 21.       | Sealing and Marking of Bids .....                                    | 14        |
| 22.       | Deadline for Submission of Bids .....                                | 16        |
| 23.       | Late Bids .....  | 17        |
| 24.       | Withdrawal, and Modification of Bids .....                           | 17        |
| 25.       | Bid Opening.....   | 18        |
| <b>E.</b> | <b>Evaluation and Comparison of Bids .....</b>                       | <b>19</b> |
| 26.       | Confidentiality .....  | 19        |



|           |   |           |
|-----------|---|-----------|
| 27.       | Clarification of Bids.....  | 19        |
| 28.       | Deviations, Reservations, and Omissions.....                            | 20        |
| 29.       | Determination of Responsiveness .....                                   | 20        |
| 30.       | Nonconformities, Errors, and Omissions.....                             | 21        |
| 31.       | Qualification of the Bidder.....  | 21        |
| 32.       | Correction of Arithmetical Errors.....                                  | 21        |
| 33.       | Conversion to Single Currency .....                                     | 22        |
| 34.       | Domestic Preference .....   | 22        |
| 35.       | Subcontractors .....  | 22        |
| 36.       | Evaluation of Price Bids.....   | 22        |
| 37.       | Comparison of Bids .....  | 23        |
| 38.       | Employer's Right to Accept Any Bid, and to Reject Any or All Bids ..... | 23        |
| <b>F.</b> | <b>Award of Contract.....</b>   | <b>23</b> |
| 39.       | Award Criteria.....   | 23        |
| 40.       | Letter of Intent to Award the Contract/ Notification of Award.....      | 23        |
| 41.       | Performance Security and Line of Credit .....                           | 23        |
| 42.       | Signing of Contract.....  | 24        |
| 43.       | Complain and Review.....  | 24        |





# Section 1 - Instructions to Bidders

## A. General

1. **Scope of Bid**
  - 1.1 In connection with the Invitation for Bids indicated in the Bid Data Sheet (BDS), the Employer, as indicated in the BDS, issues this Bidding Document for the procurement of Works as specified in Section 5 (Works Requirements). The name, identification, and number of Contracts of the International Competitive Bidding (ICB) are provided in the BDS.
  - 1.2 Throughout this Bidding Document:
    - (a) the term "in writing" means communicated in written form and delivered against receipt;
    - (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and
    - (c) "day" means calendar day.
2. **Source of Funds**
  - 2.1 **GoN Funded:** In accordance with its annual program and budget, approved by the GoN, the implementing agency **indicated in the BDS** plans to apply a portion of the allocated budget toward the cost of the project named in the BDS. The GoN intends to apply a portion of the allocated budget to eligible payments under the contract(s) for which this Bidding Document is issued.

Or

Public Entities' own Resource Funded: In accordance with its annual program and budget, approved by the public entity, the implementing agency indicated in the BDS plans to apply a portion of the allocated budget to eligible payments under the contract(s) for which this Bidding Document is issued.

Or

**DP Funded:** The GoN has applied for or received financing (hereinafter called "funds") from the Development Partner (hereinafter called "the DP") **indicated in the BDS** toward the cost of the project **named in the BDS**. The GoN intends to apply a portion of the funds to eligible payments under the contract(s) for which this Bidding Document is issued.
  - 2.2 DP Funded: Payment by the DP will be made only at the request of the GoN and upon approval by the DP in accordance with the terms and conditions of the financing agreement between the GoN and the DP (hereinafter called the "Loan Agreement"), and will be subject in all respects to the terms and conditions of that Loan Agreement. No party other than the GoN shall derive any rights from the Loan Agreement or have any claim to the funds.
3. **Fraud and Corruption**
  - 3.1 The Government of Nepal (GoN) requires that the procuring entities as well as bidders, suppliers, and contractors and their sub-contractors under GoN/DP-financed contracts, shall adhere to the highest standard of ethics during the procurement and execution of such contracts. In this context, the Employer;
    - (a) defines, for the purposes of this provision, the terms set forth below as follows:
      - (i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the



actions of another party;

- (ii) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
- (iii) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
- (iv) "collusive practice" means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party.
- (v) "obstructive practice" means:
  - (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a GoN/DP investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
  - (bb) acts intended to materially impede the exercise of the GoN's/DP's inspection and audit rights provided for under sub-clause 3.5 below.
- (b) will reject bid(s) if it determines that the bidder has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- (c) will sanction a firm or individual, including declaring ineligible, for a stated period of time, to be awarded a GoN/DP-financed contract if it at any time determines that the firm has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for, or in executing, a GoN/DP-financed contract.

3.2 The Bidder shall not carry out or cause to carry out the following acts with an intention to influence the implementation of the procurement process or the procurement agreement:

- (a) give or propose improper inducement directly or indirectly,
- (b) distortion or misrepresentation of facts,
- (c) engaging in corrupt or fraudulent practice or involving in such act,
- (d) interference in participation of other competing bidders,
- (e) coercion or threatening directly or indirectly to cause harm to the person or the property of any person to be involved in the procurement proceedings,
- (f) collusive practice among bidders before or after submission of bids for distribution of works among bidders or fixing artificial/uncompetitive bid price with an intention to deprive the Employer the benefit of open competitive bid price,
- (g) contacting the Employer with an intention to influence the Employer with regards to the bids or interference of any kind in examination and evaluation of the bids during the period from the time of opening of the



bids until the notification of award of contract.

- 3.3 PPMO on the recommendation of the Employer may **blacklist** a Bidder for a period of one (1) to three (3) years for its conduct including the following grounds and seriousness of the act committed by the bidder:
- (a) if convicted by a court of law in a criminal offence which disqualifies the Bidder from participating in the contract,
  - (b) if it is established that the contract agreement signed by the Bidder was based on false or misrepresentation of Bidder's qualification information,
  - (c) if it at any time determines that the firm has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for, or in executing, a GoN/DP-financed contract.
  - (d) if the Successful Bidder fails to sign the Contract.
- 3.4 A bidder declared blacklisted and ineligible by the GoN, Public procurement Monitoring Office (PPMO) and/or the DP in case of DP funded project, shall be ineligible to bid for a contract during the period of time determined by the GoN, PPMO and/or the DP.
- 3.5 The Contractor shall permit the GoN/DP to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the GoN/DP, if so required by the GoN/DP.
- 3.6 DP Funded: In pursuance of the fraud and corruption policy, the DP.
- (a) will reject a Bid if it determines that the bidder recommended for award has directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
  - (b) will cancel the portion of the loan/ credit/ grant allocated to a contract if it determines at any time that representative(s) of the GoN or of a beneficiary of the fund engaged in corrupt, fraudulent, collusive, or coercive practices during the procurement or the execution of that contract, without the GoN having taken timely and appropriate action satisfactory to the DP to address such practices when they occur.
- 3.7 A bidder declared blacklisted and ineligible by the GoN, Public Procurement Monitoring Office (PPMO) and/or the DP in case of DP funded project, may be ineligible to bid for a contract during the period of time determined by the GoN, PPMO and/or the DP.
- 3.8 In case of a natural person or firm/institution/company which is already declared blacklisted and ineligible by the GoN, any other new or existing firm/institution/company owned partially or fully by such Natural person or Owner or Board of director of blacklisted firm/institution/company; shall not be eligible bidder.

#### 4. Eligible Bidders

- 4.1 A Bidder may be a natural person, private entity, or government-owned entity—subject to ITB 4.5—or any combination of them in the form of a Joint Venture (JV) under an existing agreement, or with the intent to constitute a legally-enforceable joint venture. In the case of a JV:
- (a) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms. Maximum number of JV and other provision for JV shall be as per specified in the BDS. The qualification requirement of the parties to the JV shall be as specified in Section 3; Evaluation and qualification Criteria,



and

- (b) the JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the JV during the bidding process and, in the event the JV is awarded the Contract, during Contract execution.
- 4.2 A Bidder, and all parties constituting the Bidder, shall have the nationality of Nepal or any country or eligible countries mentioned in the BDS. A Bidder shall be deemed to have the nationality of a country if the Bidder is a citizen or is constituted, or incorporated, and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed Sub-contractors or suppliers for any part of the Contract including related services.
- 4.3 A Bidder shall not have a conflict of interest. A Bidder found to have a conflict of interest shall be disqualified. A Bidder may be considered to be in a conflict of interest with one or more parties in this bidding process, if:
- (a) they have controlling partners in common; or
  - (b) they receive or have received any direct or indirect subsidy from any of them; or
  - (c) they have the same legal representative for purposes of this bid; or
  - (d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or
  - (e) a Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which the party is involved. However, this does not limit the inclusion of the same Sub-contractor in more than one bid; or
  - (f) a Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the Contract that is the subject of the Bid; or
  - (g) a Bidder or any of its affiliates has been hired (or is proposed to be hired) by the Employer as Engineer for the Contract.
- 4.4 A firm that is under a declaration of ineligibility by the GoN/DP in accordance with ITB 3, at the date of the deadline for bid submission or thereafter, shall be disqualified. The list of debarred firm is available at the electronic address specified in the BDS.
- 4.5 Enterprises owned by GoN shall be eligible only if they can establish that they are legally and financially autonomous and operate under commercial law, and that they are not a dependent agency of the GoN.
- 4.6 Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer, as the Employer shall reasonably request.
- 4.7 In case a prequalification process has been conducted prior to the bidding process, this bidding is open only to prequalified Bidders.
- 4.8 Firms shall be excluded in any of the cases, if
- (a) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Employer's country prohibits any import of goods or Contracting of



works or services from that country or any payments to persons or entities in that country.

- (b) DP Funded: as a matter of law or official regulation, Nepal prohibits commercial relations with that country, provided that the DP is satisfied that such exclusion does not preclude effective competition for the supply of goods or related services required;
- (c) DP Funded: a firm has been determined to be ineligible by the DP in relation to their guidelines or appropriate provisions on preventing and combating fraud and corruption in projects financed by them.

- 4.9 Domestic Bidder shall be eligible only if the bidder has obtained Permanent Account Number (PAN) and Value Added Tax (VAT) Registration Certificate(s) and Tax Clearance Certificate or proof of submission of income return as stated in BDS from the Inland Revenue Office. Foreign bidder shall be eligible only if the bidder submits the documents indicated in the BDS at the time of bid submission and a declaration to submit the document(s) indicated in the BDS at the time of contract agreement.

**5. Eligible Plant and Services**

- 5.1 The materials, equipment and services to be supplied under the Contract shall have their origin in any source countries as defined in ITB 4.2 above and all expenditures under the Contract will be limited to such materials, equipment, and services. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment and services.

For purposes of ITB 5.1 above, "origin" means the place where the materials and equipment are mined, grown, produced or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that differs substantially in its basic characteristics or in purpose or utility from its components.

**B. Contents of Bidding Document**

**6. Sections of Bidding Document**

- 6.1 The Bidding Document consist of Parts I, II, and III, which include all the Sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB 8.

**PART I Bidding Procedures**

Section 1 - Instructions to Bidders (ITB)

Section 2 - Bid Data Sheet (BDS)

Section 3 - Evaluation and Qualification Criteria (EQC)

Section 4 - Bidding Forms (BDF)

**PART II Requirements**

Section 5 – Works Requirements (WRQ)

Section 6 – Bill of Quantities (BOQ)

**PART III Conditions of Contract and Contract Forms**

Section 7 - General Conditions of Contract (GCC)

Section 8 - Special Conditions of Contract (SCC)



## Section 9 - Contract Forms (COF)

- 6.2 The Invitation for Bids issued by the Employer is not part of the Bidding Document.
- 6.3 The Employer is not responsible for the completeness of the Bidding Document and their Addenda, if they were not obtained directly from the source stated by the Employer in the Invitation for Bids.
- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of the bid.
- 7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting**
- 7.1 A prospective Bidder requiring any clarification of the Bidding Document shall contact the Employer in writing at the Employer's address indicated in the BDS or raise any question or curiosity during the pre-bid meeting if provided for in accordance with ITB 7.4. The Employer shall be required to make available as soon as possible the answer to such question or curiosity in writing to any request for clarification, provided that such request is received as mentioned in BDS. The Employer shall forward copies of its response to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. Should the Employer deem it necessary to amend the Bidding Document as a result of a request for clarification, it shall do so following the procedure under ITB 8 and ITB 22.2.
- 7.2 The Bidder is encouraged to visit and examine the Site of Works and its surroundings and obtain for itself, on its own risk and responsibility, all information that may be necessary for preparing the bid and entering into a Contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.
- 7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
- 7.4 The Bidder's designated representative is invited to attend a pre-bid meeting, if provided for in the BDS. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 7.5 The Bidder is requested, as far as possible, to submit any questions in writing, to reach the Employer as mentioned in BDS.
- 7.6 Minutes of the pre-bid meeting, including the text of the questions raised, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3. Any modification to the Bidding Document that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an addendum pursuant to ITB 8 and not through the minutes of the pre-bid meeting.
- 7.7 Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.
- 8. Amendment of**
- 8.1 At any time prior to the deadline for submission of bids, the Employer may amend





**Bidding Document**

the Bidding Document by issuing addenda.

- 8.2 Any addendum issued shall be part of the Bidding Document and shall be communicated in writing to all who have obtained the Bidding Document from the Employer in accordance with ITB 6.3.
- 8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at its discretion, extend the deadline for the submission of bids, pursuant to [ITB 22.2](#).

### C. Preparation of Bids

- 9. Cost of Bidding** 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
- 10. Language of Bid** 10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in the language specified in the BDS. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified in the BDS, in which case, for purposes of interpretation of the Bid, such translation shall govern.
- 11. Documents Comprising the Bid** 11.1 The Bid shall comprise two envelopes submitted simultaneously, one called the Technical Bid containing the documents listed in ITB 11.2 and the other the Price Bid containing the documents listed in ITB 11.3, both envelopes enclosed together in an outer single envelope.
- 11.2 The Technical Bid shall comprise the following:
- (a) Letter of Technical Bid;
  - (b) Completed Schedules, in accordance with ITB 12;
  - (c) Bid Security, in accordance with ITB 19;
  - (d) Alternative Technical Bids, at Bidder's option and if permissible, in accordance with ITB 13;
  - (e) Written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2;
  - (f) Documentary evidence in accordance with ITB 17 establishing the Bidder's qualifications to perform the Contract;
  - (g) Technical Proposal in accordance with ITB 16;
  - (h) In the case of a bid submitted by a JV, the JV agreement, or letter of intent to enter into a JV including a draft agreement, indicating at least the parts of the Works to be executed by the respective partners; and
  - (i) any other required documents, which is not against the provision of Procurement Act/Regulation/Directives and Standard Bidding Document issued by PPMO as specified in the BDS.
- 11.3 The Price Bid shall comprise the following:
- (a) Letter of Price Bid;
  - (b) completed Bill of Quantities, Price Schedules, in accordance with ITB 12 and ITB 14, or as stipulated in the BDS;



- (c) alternative price Bids, at Bidder's option and if permissible, in accordance with ITB 13;
- (d) Any other document required in the BDS.
- 11.4 The Bidder is solely responsible for the authenticity of the documents submitted by the Bidder.
- 12. Letter of Bid and Schedules**
- 12.1 The Letters of Technical Bid and Price Bid, and the Schedules, and all documents listed under ITB 11, shall be prepared using the relevant forms furnished in Section 4 (Bidding Forms). The forms must be completed without any alterations to the text, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested and as required in the BDS.
- 13. Alternative Bids**
- 13.1 Unless otherwise indicated in the BDS, alternative bids shall not be considered.
- 13.2 When alternative times for completion are explicitly invited, a statement to that effect will be included in the BDS, as will the method of evaluating different times for completion.
- 13.3 When specified in the BDS pursuant to ITB 13.1, and subject to ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding Document must first price the Employer's design as described in the Bidding Document and shall further provide all information necessary for a complete evaluation of the alternative by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details.
- 13.4 When specified in the BDS, Bidders are permitted to submit alternative technical solutions for specified parts of the Works. Such parts will be identified in the BDS and described in [Section 5 \(Employer's Requirements\)](#). The method for their evaluation will be stipulated in Section 3 (Evaluation and Qualification Criteria).
- 14. Bid Prices and Discounts**
- 14.1 The prices and discounts quoted by the Bidder in the Letter of Price Bid and in the Schedules shall conform to the requirements specified below.
- 14.2 The Bidder shall submit a Price bid for the whole of the works described in ITB 1.1 by filling in prices for all items of the Works, as identified in Section 4 (Bidding Forms). In case of Unit Rate Contracts, the Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the rates for other items and prices in the Bill of Quantities.
- 14.3 The price to be quoted in the Letter of Price Bid shall be the total price of the Bid, excluding any discounts offered.
- 14.4 Unconditional discounts, if any, and the methodology for their application shall be quoted in the Letter of Price Bid, in accordance with ITB 12.1.
- 14.5 If so indicated in ITB 1.1, bids are invited for individual Contracts or for any combination of Contracts (packages). Bidders wishing to offer any price reduction for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Price reductions or discounts shall be submitted in accordance with ITB 14.3, provided the bids for all Contracts are submitted and opened at the same time.
- 14.6 Unless otherwise provided in the BDS and the Conditions of Contract, the prices quoted by the Bidder shall be fixed. If the prices quoted by the Bidder





are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract, the Bidder shall furnish the indices and weightings for the price adjustment formulae in the Table of Adjustment Data in Section 4 (Bidding Forms) and the Employer may require the Bidder to justify its proposed indices and weightings.

- 14.7 The bidder is subject to local taxes such as VAT, social charges or income taxes on nonresident international personnel, and also duties, fees, levies on amounts payable by the employer under the Contract. All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 30 days prior to the deadline for submission of bids, shall be included in the rates and prices and the total bid price submitted by the Bidder.

**15. Currencies of Bid and Payment**

- 15.1 The unit rates and the prices shall be quoted by the bidder entirely in Nepalese currency if not otherwise specified in the BDS.
- 15.2 Bidders shall indicate the portion of the bid price that corresponds to expenditures incurred in Nepalese currency in the Schedule of Payment Currencies included in Section 4 (Bidding Forms).
- 15.3 Bidders expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country and wishing to be paid accordingly may indicate up to three convertible foreign currencies included in daily publication of Nepal Rastra Bank foreign currency exchange rate in the Schedule of Payment Currencies included in Section 4 (Bidding Forms).
- 15.4 The rates of exchange to be used by the bidder for currency conversion during bid preparation shall be the selling rates for similar transactions prevailing on the date 30 days prior to the deadline for submission of bids published by Nepal Rastra Bank. Bidders should note that for the purpose of payments, the exchange rates confirmed by Nepal Rastra Bank as the selling rates prevailing 30 days prior to the deadline for submission of bids shall apply for the duration of the Contract so that no currency exchange risk is borne by the bidder.
- 15.5 Foreign currency requirements indicated by the bidders in the Schedule of Payment Currencies shall include but not limited to the specific requirements for
- (a) expatriate staff and labor employed directly on the Works;
  - (b) social, insurance, medical and other charges relating to such expatriate staff and labor, and foreign travel expenses;
  - (c) imported materials, both temporary and permanent, including fuels, oil and lubricants required for the Works;
  - (d) depreciation and usage of imported Plant and Contractor's Equipment, including spare parts, required for the Works;
  - (e) foreign insurance and freight charges for imported materials, Plant and Contractor's Equipment, including spare parts; and
  - (f) overhead expenses, fees, profit, and financial charges arising outside the Employer's country in connection with the Works.
- 15.6 Bidders may be required by the Employer to clarify their foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Payment Currencies are reasonable and responsive to ITB 15.3 above, in which case a detailed breakdown of its foreign currency requirements shall be provided by the Bidder.

- 15.7 Bidders should note that during the progress of the Works, the foreign



currency requirements of the outstanding balance of the Contract Price may be adjusted by agreement between the Employer and the Contractor in order to reflect any changes in foreign currency requirements for the Contract, in accordance with Sub-Clause 14.15 of the Conditions of Contract. Any such adjustment shall be effected by comparing the percentages quoted in the bid with the amounts already used in the Works and the Contractor's future needs for imported items.

**16. Documents Comprising the Technical Proposal**

16.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section 4 (Bidding Forms), in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.

**17. Documents Establishing the Qualifications of the Bidder**

17.1 To establish its qualifications to perform the Contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding information sheets included in Section 4 (Bidding Forms).

17.2 Domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility as described in ITB 34 if margin of preference for domestic bidders is applicable in accordance with ITB 34.

**18. Period of Validity of Bids**

18.1 Bids shall remain valid for the period specified in the BDS after the bid submission deadline date prescribed by the Employer. A bid valid for a shorter period shall be rejected by the Employer as nonresponsive.

18.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 19, it shall also be extended 30 days beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its Bid and to include any additional conditions against the provisions specified in Bid Documents.

**19. Bid Security**

19.1 The Bidder shall furnish as part of its bid, in original form, a bid security as specified in the BDS. In case of e-submission of bid, the Bidder shall upload scanned copy of Bid security letter at the time of electronic submission of the bid. The Bidder accepts that the scanned copy of the Bid security shall, for all purposes, be equal to the original. The details of original Bid Security and the scanned copy submitted with e-bid should be the same otherwise the bid shall be non-responsive.

19.2 The bid security shall be, at the Bidder's option, in any of the following forms:

- (a) an unconditional bank guarantee from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law or;
- (b) a cash deposit voucher in the Employer's Account as specified in BDS.

In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section IV (Bidding Forms) or in another Form acceptable to the employer. The form must include the complete name of the Bidder. The bid security shall be valid for minimum thirty (30) days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2.

19.3 The bid security issued by any foreign Bank outside Nepal must be counter guaranteed by a Commercial Bank or Financial Institution eligible to issue



Bank Guarantee as per prevailing Law in Nepal.

- 19.4 Any bid not accompanied by an enforceable and substantially compliant bid security, if required in accordance with ITB 19.1, shall be rejected by the Employer as nonresponsive. In case of e- Submission, if the scanned copy of an acceptable Bid Security letter is not uploaded with the electronic Bid then Bid shall be rejected.
- 19.5 The bid security of unsuccessful Bidders shall be returned within three days, once the successful bidder has furnished the required performance security and signed the Contract Agreement pursuant to ITB 41.1 and ITB 42.1.
- 19.6 The bid security shall be forfeited if:
- (a) a Bidder requests for withdrawal or modification of its bid, except as provided in ITB 18.2:
    - (i) during the period of bid validity specified by the Bidder on the Letter of Technical Bid and Price Bid, in case of electronic submission;
    - (ii) from the period twenty-four hours prior to bid submission deadline up to the period of bid validity specified by the Bidder on the Letter of Technical Bid and Price Bid, in case of hard copy submission.
  - (b) a Bidder changes the prices or substance of the bid while providing information pursuant to clause 27.1;
  - (c) a Bidder involves in fraud and corruption pursuant to clause 3.1;
  - (d) the successful Bidder fails to:
    - (i) furnish a performance security in accordance with ITB 41.1;
    - (ii) sign the Contract in accordance with ITB 42.1; or
    - (iii) accept the correction of arithmetical errors pursuant to clause 32;
- 19.7 The Bid Security of a JV shall be in the name of the JV that submits the bid. If the JV has not been legally constituted at the time of bidding, the Bid Security shall be in the names of all future partners as named in the letter of intent mentioned in ITB 4.1.

**20. Format and  
Signing of Bid**

- 20.1 The Bidder shall prepare one original of the documents comprising the bid as described in ITB 11 and clearly mark it "ORIGINAL". Alternative bids, if permitted in accordance with ITB 13, shall be clearly marked "ALTERNATIVE". In addition, the Bidder shall submit copies of the bid in the number specified in the BDS, and clearly mark each of them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.
- In case of e-submission of bid, the Bidder shall submit his bid electronically in PDF or web forms files as specified in ITB Clause 21.1(b). If a Bidder submits both the electronic bid and a bid in hard copy within the bid submission deadline, then the submitted Bids shall be accepted for evaluation provided that the facts and figures in hard copy confirm to those in electronic bid. If there is any major discrepancy in fact and figures in the electronic bid and bid in hard copy, it shall be treated as two separate bids from one Bidder and both the Bids shall be disqualified, as per ITB Clause 4.3 (e).
- 20.2 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the BDS and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid, except for unamended printed literature,



shall be signed or initialed by the person signing the bid.

- 20.3 Any amendments such as interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.

## D. Submission and Opening of Bids

### 21. Sealing and Marking of Bids

- 21.1 Bidders may always submit their bids by mail or by hand or by courier. When so specified in the BDS, bidders shall have the option of submitting their bids electronically. Procedures for submission, sealing and marking are as follows:

(a) Bidders submitting bids by mail, by hand or by courier

- i. Bidders shall enclose the original of the Technical Bid, and the original of the Price Bid and each copy of the Technical Bid and Price Bid, including alternative bids, if permitted in accordance with ITB 13, in separate sealed envelopes, duly marking the envelopes as: "ORIGINAL TECHNICAL BID", "ORIGINAL PRICE BID", "ALTERNATIVE BID" and "COPY OF TECHNICAL BID" and "COPY OF PRICE BID". These envelopes containing the original and the copies shall then be enclosed in one single envelope.

ii. The inner and outer envelopes shall:

(aa) bear the name and address of the Bidder;

(bb) be addressed to the Employer as provided in BDS 22.1;

(cc) bear the specific identification of this bidding process indicated in BDS 1.1;

(dd) The outer envelope and the inner envelope containing Technical Bid shall bear a warning not to open before the time and date for the opening of Technical Bid in accordance with ITB 25.1.

iii. The inner envelope containing the Price Bid shall bear a warning not to open until advised by the Employer in accordance with ITB 25.7

iv. If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the bid.

(b) Electronic Bid submission procedures: Bidders submitting Bids electronically shall follow the electronic bid submission procedure specified in this clause as follows:

- i. For e-submission, the bidder is required to register in the e-GP portal <https://www.bolpatra.gov.np>. for downloading and submitting the bid electronically.

ii. Interested bidders may either purchase the bidding documents from the employer's office as specified in the invitation for bid (IFB) or bidders registered in the e-GP portal of PPMO may download the bidding document from <http://www.bolpatra.gov.np> after login. If bidders choose to download the bidding document and submit the bid electronically, then the cost of the bidding document shall be deposited as specified in IFB. In addition, electronic scanned copy (.pdf format) of the bank deposit voucher/cash receipt should also be submitted along with the electronic bid files.

iii. The bidder shall then prepare/fill the documents and forms included in the issued bid documents or the downloaded bid documents from the e-GP portal of PPMO - <http://www.bolpatra.gov.np>. as applicable. The



required documents and forms shall be prepared in PDF form and/or shall be filled in the web forms in the e-GP system as specified below:

Technical Bid:

| S. N. | Document  | Requirement              | Remarks                                |
|-------|---|--------------------------|--|
| 1     | Letter of Technical Bid   | Mandatory                | PDF/Web Forms                          |
| 2     | Bid Security (Bank Guarantee)                                   | Mandatory                | PDF                                    |
| 3     | Company/Firm Registration Certificate                           | Mandatory                | PDF                                    |
| 4     | VAT registration  | Mandatory                | PDF                                    |
| 5     | Tax clearances certificate or evidence of tax return submission | Mandatory                | PDF                                    |
| 6     | Power of Attorney of Bid signatory                              | Mandatory                | PDF                                    |
| 7     | Business Registration (Licence) Certificate                     | Mandatory, if Applicable | PDF                                    |
| 8     | Bank Voucher for cost of bid document                           | Mandatory                | PDF                                    |
| 9     | Joint venture agreement   | Mandatory                | Mandatory in case of JV Bids Only      |
| 10    | Qualification Information                                       | Mandatory                | Web Forms (Experience, Turnover, etc.) |
| 11    | Additional Document , if any                                    | Mandatory                | PDF                                    |

Price Bid;

| S.N. | Document                          | Requirement   | Remarks  |
|------|-----------------------------------|---------------|--|
| 1    | Letter of Price Bid               | Mandatory     | PDF/Web Forms  |
| 2    | Applicable Price Adjustment Table | If applicable | No Price adjustment will be treated if the indices in the Price Adjustment Table are not provided. |
| 3    | Completed BOQ or Price Schedule   | Mandatory     | Web Forms  |



Note:

- a) Bidders (all partners in case of JV) should verify/update their profile documents as appropriate for the specific bid before submitting their bid electronically.
- iv) The Bidder shall then upload the PDF bid files and submit the complete bid online through e-GP portal of PPMO- <http://www.bolpatra.gov.np> within the specified date and time.
- v) Bidders are advised to download the bid submission report to ensure that all the documents/ files are up to date and complete.
- vi) The Bidder / Bid shall meet the following requirements and conditions for e-submission of bids;
  - aa) The e-submitted bids must be readable through open standards interfaces. Unreadable and or partially submitted bid files shall be considered incomplete and rejected for further bid evaluation.
  - bb) In addition to electronically submitted PDF files/web forms, the Bidder shall be required to submit original bid security letter/ documents and clarifications as specified in ITB Clause 27. If a bidder does not submit the original Bid security letter and requested documents and or clarifications within the specified time limit then the bid shall not be considered for further evaluation.
  - cc) If major discrepancy is found between the electronically submitted PDF bid files and the documents/ clarifications provided by the Bidder as per ITB Clause 27, then the bid shall not be considered for further evaluation.
  - dd) The facility for submission of bid electronically through e-submission is to promote transparency, non-discrimination, equality of access, and open competition in the bidding process. The Bidders are fully responsible to use the e- submission facility properly in e-GP portal of PPMO- <http://www.bolpatra.gov.np> as per specified procedures and in no case the Employer shall be held liable for Bidder's inability to use this facility.
  - ee) When a bidder submits electronic bid through the PPMO e-GP portal, it is assumed that the bidder has prepared the bid by studying and examining the complete set of the Bidding documents including specifications, drawings and conditions of contract.
  - ff) Bidders who submit electronic bid should deposit the bidding document fee as specified in IFB and upload the scan copy (in pdf format) of the deposit voucher at the time of bid submission. The deposited amount shall be verified by the Employer during the bid evaluation process. The submitted Bid shall be non-responsive and shall not be evaluated if the cost for bidding document is not deposited as specified in the IFB.

**22. Deadline for Submission of Bids**

- 22.1 Bids must be received by the Employer at the address and no later than the date and time indicated in the BDS.

In case of e-submission, the standard time for e-submission is Nepal Standard Time as set out in the server. The e-procurement system will accept the e-submission of bid from the date of publishing of notice and will automatically not allow the e-submission of bid after the deadline for submission of bid.

- 22.2 The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as





extended.

**23. Late Bids**

23.1 The Employer shall not consider any bid that arrives after the deadline for submission of bids, in accordance with ITB 22. Any bid received by the Employer after the deadline for submission of bids shall be declared late, rejected, and returned unopened to the Bidder.

**24. Withdrawal, and Modification of Bids**

24.1 A Bidder may withdraw, or modify its bid after it has been submitted either in hard copy or by e-submission. Procedures for withdrawal or modification of submitted bids are as follows:

(i) Bids submitted in hard Copy

a) Bidders may withdraw or modify its bids by sending a written notice in a sealed envelope, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 20.2 before 24 hours prior to the deadline of submission of bids. The corresponding modification of the bid must accompany the respective written notice. All notices must be:

(aa) Prepared and submitted in accordance with ITB 20 and ITB 21 and in addition, the respective envelopes shall be clearly marked "WITHDRAWAL", "MODIFICATION;" and

(bb) Received by the Employer twenty-four hour prior to the deadline prescribed for submission of bids, in accordance with ITB 22.

(cc) The bidder shall clearly specify on envelope whether "MODIFICATION" is of Technical Bid or Price Bid.

ii) E-submitted bids.

a) Bidder may submit modification or withdrawal prior to the deadline prescribed for submission of bid through e-GP system by using the forms and instructions provided by the system. Once a Bid is withdrawn, bidder will not be able to submit another bid response for the same bid.

24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders after completion of the bid opening.

24.3 Bidder may submit request for withdrawal or modification only one time.

24.4 No bid may be withdrawn if the bid has already been modified.

24.5 Except in case of any modification or correction in bid document made by procuring entity, Bidder may submit request for withdrawal or modification only one time.

24.6 In case of hard copy bid, no bid may be withdrawn if the bid has already been modified; except in case of any modification or correction in bid document by procuring entity.

24.7 Request for withdrawal or modification must be made through the same medium of submission. Request for withdrawal or modifications through different medium shall not be considered.

24.8 The following provisions apply for withdrawal or modification of the Bids:

(i) In case of bids submitted in hard copy no bid shall be withdrawn or modified in the interval between 24 hours prior to the deadline for submission of



bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereof.

- (ii) In case of e-submitted bids no bids shall be withdrawn or modified in the interval between deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereof.

## 25. Bid Opening

- 25.1 The Employer shall open the bids in public at the address, date and time specified in the BDS in the presence of Bidders' designated representatives and anyone who choose to attend. Then the Employer shall segregates the Technical Bid and Price Bid separately. The Price Bids will remain unopened and will be held in custody of the Employer until the specified time of their opening. If the Technical Bid and Price Bid are submitted together in one inner envelope, the Employer may reject the entire Bid.
- 25.2 The Employer shall download the e-submitted Bid files. The e-procurement system allows the Employer to download the e-submitted bid files (report) only after bid opening date and time after login simultaneously by at least two members of the Bid opening committee.
- 25.3 After downloading each e-bid, electronically submitted Technical Bid shall be opened at first in the same time and date as specified above. Electronic Bids shall be opened one by one and read out. The e-submitted technical bids must be readable through open standards interfaces. Unreadable and or partially submitted bid files shall be considered incomplete.
- 25.4 Thereafter, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelope with the corresponding Bid shall not be opened, but returned to the Bidder. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at bid opening. Next, envelopes marked "MODIFICATION" shall be opened and read out with the corresponding bid. No Technical Bid and/or Price Bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out and recorded at bid opening. Only the Technical Bid, both Original as well as Modification, are to be opened, read out, and recorded at the opening. Price Bids, both Original and Modification, will remain unopened in accordance with ITB 25.1.
- 25.5 All other envelopes holding the Technical Bid shall be opened one at a time, reading out: the name of the Bidder; whether there is a modification; the presence of a bid security and any other details as the Employer may consider appropriate. Only Technical Bids read out and recorded at bid opening shall be considered for evaluation. No bid shall be rejected at opening of Technical Bids except for late bids, in accordance with ITB 23.1.
- 25.6 The Employer shall prepare a record of the opening of Technical Bids that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, or modification; and the presence or absence of a bid security. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record.
- 25.7 At the end of the evaluation of the Technical Bids, the Employer will invite bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified for award to attend the opening of the Price Bids. The date, time, and location of the opening of Price Bids will be advised in writing by the Employer. Bidders shall be given reasonable notice for the opening of Price Bids.





- 25.8 The Employer will notify Bidders in writing who have been rejected on the grounds of their Technical Bids being substantially nonresponsive to the requirements of the Bidding Document and return their Price Bids unopened.
- 25.9 The Employer shall conduct the opening of Price Bids of all Bidders who submitted substantially responsive Technical Bids, in the presence of Bidders' representatives who choose to attend at the address, on the date, and time specified by the Employer. The Bidder's representatives who are present shall be requested to sign a register evidencing their attendance.
- 25.10 All envelopes containing Price Bids shall be opened one at a time and the following read out and recorded:
- a) the name of the Bidder;
  - b) whether there is a modification;
  - c) the Bid Prices, including any discounts and alternative offers; and
  - d) any other details as the Employer may consider appropriate.
- Only Price Bids, discounts, modifications, and alternative offers read out and recorded during the opening of Price Bids shall be considered for evaluation. No Bid shall be rejected at the opening of Price Bids.
- 25.11 The Employer shall prepare a record of the opening of Price Bids that shall include, as a minimum, the name of the Bidder, the Bid Price (per lot if applicable), any discounts, modifications and alternative offers. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record.

## E. Evaluation and Comparison of Bids

### 26. Confidentiality

- 26.1 Information relating to the examination, evaluation, comparison, and post qualification of bids and recommendation of Contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on Contract award is communicated to all Bidders.
- 26.2 Any attempt by a Bidder to influence the Employer in the evaluation of the bids or Contract award decisions may result in the rejection of its bid.
- 26.3 Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it may do so in writing.

### 27. Clarification of Bids

- 27.1 To assist in the examination, evaluation, and comparison of the Technical and Price Bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change in the substance of the Technical Bid or prices in the Price Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Price Bids. In case of e-submission of bid, upon notification from the employer, the bidder shall also submit the original of documents comprising the Technical and Price Bid as per ITB 11 for verification of submitted documents for acceptance of the e-submitted bid.
- 27.2 If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected.



**28. Deviations, Reservations, and Omissions**

28.1 During the evaluation of bids, the following definitions apply:

- a) "Deviation" is a departure from the requirements specified in the Bidding Document;
- b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and
- c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.

**29. Determination of Responsiveness**

29.1 The Employer's determination of a bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.

29.2 A substantially responsive Technical Bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,

- (a) if accepted, would:
  - (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or
  - (ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer's rights or the Bidder's obligations under the proposed Contract; or
- (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.

29.3 The Employer shall examine the technical aspects of the Bid submitted in accordance with ITB 16, Technical Proposal, in particular, to confirm that all requirements of Section 5 (Works Requirements) have been met without any material deviation, reservation or omission.

29.4 If a bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

29.5 In case of e-submission bids, the Employer evaluates the bid on the basis of the information in the electronically submitted bid files. If the Bidder cannot substantiate or provide evidence to establish the information provided in e-submitted bid through documents/ clarifications as per ITB Clause 27, the bid shall not be considered for further evaluation.

29.6 In Case, a corruption case is being filed to Court against the Natural Person or Board of Director of the firm/institution /company or any partner of JV, such Natural Person or Board of Director of the firm/institution /company or any partner of JV such bidder's bid shall be excluded from the evaluation, if public entity receives instruction from Government of Nepal.

29.7 Except in case of e-submission, the Financial Bid of the bidder, which is evaluated as substantially non-responsive in technical bid, shall be returned to the respective bidders.



**30. Nonconformities, Errors, and Omissions**

- 30.1 Provided that a bid is substantially responsive, the Employer may waive any nonconformities in the bid that do not constitute a material deviation, reservation or omission.
- 30.2 Provided that a Technical Bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Technical Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the Price Bid. Failure of the Bidder to comply with the request may result in the rejection of its bid.
- 30.3 Provided that a Technical bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price may be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component. The adjustment shall be made using the methods indicated in Section 3 (Evaluation and Qualification Criteria).
- 30.4 If minor discrepancies are found such as in technical specification, description, feature which do not make the bid to be rejected, then the cost, which is calculated to the extent possible due to such differences shall be included while evaluating the bid.
- 30.5 If the value of such non-conformities is found to be more than fifteen percent of the quoted amount of the bidder on account of minor discrepancies pursuant to ITB 30.4, such bid shall be considered ineffective in substance and shall not be involved in evaluation.

**31. Qualification of the Bidder**

- 31.1 The Employer shall determine to its satisfaction during the evaluation of Technical Bids whether Bidders meet the qualifying criteria specified in Section 3 (Evaluation and Qualification Criteria).
- 31.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17.
- 31.3 An affirmative determination of qualification shall be a prerequisite for the opening and evaluation of a Bidder's Price Bid. A negative determination shall result into the disqualification of the Bid, in which event the Employer shall return the unopened Price Bid to the Bidder.

**32. Correction of Arithmetical Errors**

- 32.1 During the evaluation of Price Bids, the Employer shall correct arithmetical errors on the following basis:
- (a) only for unit price Contracts, if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;
  - (b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
  - (c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail



subject to (a) and (b) above.

32.2 If the Bidder that submitted the lowest evaluated bid does not accept the correction of errors, its bid shall be disqualified and its bid security may be forfeited.

**33. Conversion to Single Currency**

33.1 For evaluation and comparison purposes, the currency (ies) of the bid shall be converted into a single currency as specified in the BDS.

**34. Domestic Preference**

34.1 Unless otherwise specified in the BDS, a domestic preference shall be a factor in bid evaluation.

**35. Subcontractors**

35.1 The Employer may permit subcontracting for certain specialized works as indicated in Section 3. When subcontracting is permitted by the Employer, the specialized sub-contractor's experience shall be considered for evaluation. Section 3 describes the qualification criteria for sub-contractors.

Bidders may propose subcontracting up to the percentage of total value of contracts or the volume of works as specified in the BDS.

**36. Evaluation of Price Bids**

36.1 The Employer shall evaluate Price Bid of each bid for which the Technical Bid has been determined to be substantially responsive. The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.

36.2 To evaluate a Price bid, the Employer shall consider the following:

- (a) the bid price, excluding Value Added Tax, Provisional Sums, and the provision, if any, for contingencies in the Summary Bill of Quantities, for Unit Rate Contracts, or Schedule of Prices for lump sum Contracts, but including Day work items, where priced competitively;
- (b) price adjustment for correction of arithmetic errors in accordance with ITB 32;
- (c) price adjustment due to discounts offered in accordance with ITB 14.4;
- (d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 33;
- (e) adjustment for nonconformities in accordance with ITB 30.3;
- (f) application of all the evaluation factors indicated in Section 3 (Evaluation and Qualification Criteria);

36.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.

36.4 If this Bidding Document allows Bidders to quote separate prices for different Contracts, and to award multiple Contracts to a single Bidder, the methodology to determine the lowest evaluated price of the Contract combinations, including any discounts offered in the Letter of Bid, is specified in Section 3 (Evaluation and Qualification Criteria).

36.5 If the bid for a Unit Rate Contract, which results in the lowest Evaluated Bid Price is seriously unbalanced or front loaded or extremely low in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analysis for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analysis, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder as mentioned in BDS to protect the Employer against



financial loss in the event of default of the successful Bidder under the Contract or may consider the bid as non-responsive.

36.6 In case of e-submission bids, the Employer evaluates the bid on the basis of the information in the electronically submitted bid files. If the Bidder cannot substantiate or provide evidence to establish the information provided in e-submitted bid through documents/ clarifications as per ITB Clause 27, the bid shall not be considered for further evaluation.

36.7 In Case, a corruption case is being filed to Court against the Natural Person or Board of Director of the firm/institution /company or any partner of JV, such Natural Person or Board of Director of the firm/institution /company or any partner of JV such bidder's bid shall be excluded from the evaluation, if public entity receives instruction from Government of Nepal.

**37. Comparison of Bids**

37.1 The Employer shall compare all substantially responsive bids in accordance with ITB 36.2 to determine the lowest evaluated bid.

**38. Employer's Right to Accept Any Bid, and to Reject Any or All Bids**

38.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to Contract award, without thereby incurring any liability to Bidders. In case of annulment, all bids submitted and specifically, bid securities, shall be promptly returned to the Bidders.

## **F. Award of Contract**

**39. Award Criteria**

39.1 The Employer shall award the Contract to the Bidder whose offer has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

**40. Letter of Intent to Award the Contract/ Notification of Award**

40.1 The Employer shall notify the concerned Bidder whose bid has been selected in accordance with ITB 39.1 within seven days of the selection of the bid, in writing that the Employer has intention to accept its bid and the information regarding the name, address and amount of selected bidder shall be given to all other bidders who submitted the bid.

40.2 If no bidder submits an application within a period of seven days of the notice provided under ITB 40.1, the Employer shall, accept the bid selected in accordance with ITB 39.1 and Letter of Acceptance shall be communicated to the selected bidder prior to the expiration of period of Bid validity, to furnish the performance security and sign the contract within fifteen days.

40.3 At the same time, the Employer shall affix a public notice on the result of the award on its notice board and may make arrangements to post the notice into its website, if it has; and if it does not have, into the website of the Public Procurement Monitoring Office, identifying the bid and lot numbers and the following information: (i) name of each Bidder who submitted a Bid; (ii) bid prices as read out at Bid Opening; (iii) name and evaluated prices of each Bid; (iv) name of bidders whose bids were rejected and the reasons for their rejection; and (v) name of the winning Bidder, and the Price it offered, as well as the duration and summary scope of the Contract awarded.

40.4 In Case, a corruption case is being filed to Court against the Natural Person or Board of Director of the firm/institution /company or any partner of JV, such Natural Person or Board of Director of the firm/institution /company or any partner of JV such bidder's bid shall be excluded from the evaluation, if public entity receives instruction from Government of Nepal.

**41. Performance Security and**

41.1 Within Fifteen (15) days of the receipt of Letter of Acceptance from the Employer, the successful Bidder shall furnish the performance security in





## Line of Credit

accordance with the Conditions of Contract, as specified below from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal using Sample Form for the Performance Security included in Section 9 (Contract Forms), or another form acceptable to the Employer. The performance security issued by any foreign Bank outside Nepal must be counter guaranteed by Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal.

i) If bid price of the bidder selected for acceptance is up to 15 (fifteen) percent below the approved cost estimate, the performance security amount shall be 5 (five) percent of the bid price.

ii) For the bid price of the bidder selected for acceptance is more than 15 (fifteen) percent below of the cost estimate, the performance security amount shall be determined as follows:

**Performance Security Amount = [(0.85 x Cost Estimate – Bid Price) x 0.5] + 5% of Bid Price.**

The Bid Price and Cost Estimate shall be inclusive of Value Added Tax.

Within Fifteen (15) days of the receipt of Letter of Acceptance from the Employer, the successful Bidder shall furnish the Letter of Commitment for Bank's Undertaking for Line of Credit of the amount as specified in the BDS, using Sample Form for the Line of Credit included in Section 9 (Contract Forms) at the time of contract agreement.

41.2 Failure of the successful Bidder to submit the above-mentioned Performance Security and Line of Credit or to sign the Contract Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security. In that event the Employer may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily. In such case, the award process shall be repeated according to ITB 40.

## 42. Signing of Contract

42.1 The Employer and the successful Bidder shall sign the Contract Agreement within the period as stated ITB 41.1.

42.2 Within thirty (30) days from the date of issuance of notification pursuant to ITB 40.1 unsuccessful bidders may request in writing to the Employer for a debriefing seeking explanations on the grounds on which their bids were not selected. The Employer shall promptly respond in writing to any unsuccessful Bidder who, requests for debriefing.

42.3 If the bidder whose bid has been accepted fails to sign the contract as stated ITB 42.1, the Public Procurement Monitoring Office shall blacklist the bidder on recommendation of the Public Entity.

## 43. Complain and Review

43.1 If a Bidder is dissatisfied with the Procurement proceedings or the decision made by the Employer in the intention to award the Contract, it may file an application to the Chief of the Public Entity (Employer) within Seven (7) days of providing the notice under ITB 40.1 by the Public Entity, for review of the proceedings stating the factual and legal grounds.

43.2 Late application filed after the deadline pursuant to ITB 43.1 shall not be processed.

43.3 The chief of Public Entity (Employer) shall, within five (5) days after receiving the application, give its decision with reasons, in writing pursuant to ITB 43.1:



- (a) whether to suspend the procurement proceeding and indicate the procedure to be adopted for further proceedings; or
- (b) to reject the application.

The decision of the chief of Public Entity shall be final for the Bid amount, less than Rupees Twenty Million (NRs. 20,000,000).

- 43.4 If the Bidder is not satisfied with the decision given in accordance with ITB 43.3, or the decision is not given within five (5) days of receipt of application pursuant to ITB 43.1, it can, within seven (7) days of receipt of such decision, file an application to the Review Committee of the GoN, stating the reason of its disagreement on the decision and furnishing the relevant supporting documents. The application may be sent by hand, by post, by courier, or by electronic media at the risk of the Bidder itself.
- 43.5 Late application filed after the deadline pursuant to ITB 43.4 shall not be processed
- 43.6 Within three (3) days of the receipt of application from the Bidder, pursuant to ITB 43.4, the Review Committee shall notify the concerning Public Entity to furnish its procurement proceedings, pursuant to ITB 43.3.
- 43.7 Within three (3) days of receipt of the notification pursuant to ITB 43.6, the Public Entity shall furnish the copy of the related documents to the Review Committee.
- 43.8 The Review Committee, after inquiring from the Bidder and the Public Entity, if needed, shall give its decision within one (1) month of the receipt of the application filed by the Bidder, pursuant to ITB 43.4.
- 43.9 The Bidder, filing application pursuant to ITB 43.4, shall have to furnish a cash amount or Bank guarantee from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law equivalent to one percent (1%) of its quoted amount with the validity period of at least ninety (90) days from the date of the filing of application pursuant to ITB 43.4.
- 43.10 If the claim made by the Bidder pursuant to ITB 43.4 is justified, the Review Committee shall return the security deposit pursuant to ITB 43 to the applicant, within seven (7) days of such decision made.



## Section 2 - Bid Data Sheet

This section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section 1 - Instructions to Bidders.

### A. General

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| ITB 1.1     | <p>The number of the Invitation for Bids is : <a href="#">GOD/2078/079-14</a></p> <p>The Bid is invited as <a href="#">ICB</a></p> <p>The Employer is: <a href="#">Nepal Electricity Authority, Grid Operation Department.</a></p> <p>The name of the ICB is: <a href="#">Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations.</a></p> <p>The identification number of the ICB is: <a href="#">GOD/2078/079-14</a></p> <p>The number and identification of lots (contracts) comprising this ICB is: <a href="#">NONE</a></p> |
| ITB 2.1     | <p>The name of the Project is: <a href="#">Grid Substation Capacity Increment Project</a></p> <p>The Development Partner (DP) is: <a href="#">Not Applicable</a></p> <p>The implementing agency is <a href="#">Nepal Electricity Authority (NEA)</a></p> <p>GoN Funded or DP Funded: <a href="#">Government of Nepal (GoN) and NEA</a></p>  |
| ITB 4.1 (a) | <p>Maximum number of partner in a joint venture shall be: <a href="#">3 (three)</a></p>   |
| ITB 4.2     | <p>Eligible countries– <a href="#">All countries are eligible unless otherwise restriction by the Government of Nepal (GoN).</a></p>  |
| ITB 4.4     | <p>A list of debarred firms is available at <a href="http://www.ppmo.gov.np">http://www.ppmo.gov.np</a>, official sites government of Nepal and <a href="http://www.nea.org.np">http://www.nea.org.np</a>, official site of Nepal Electricity Authority.</p>  |





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| <p><b>ITB 4.9</b></p> | <p>The domestic bidder shall submit the following documents at the time of Bid Submission:</p> <ul style="list-style-type: none"> <li>• Company/Business Registration Certificate, PAN/VAT registration certificate, Tax Clearance Certificate or Proof of submission of income return for last fiscal year 77/78 of the Bidder, and of each joint-venture partners in the case of a joint venture.</li> </ul> <p>The foreign bidder shall submit the following documents at the time of bid submission:</p> <ul style="list-style-type: none"> <li>• Legal and Business registration certificate of the Bidder, and of each joint-venture partners in the case of a joint venture, issued by the government of the country where the bidder or each joint venture partner is registered.</li> </ul> <p>The foreign bidder shall declare to submit the following documents at the time of contract agreement: Notarized Power of attorney to sign the contract</p> <p>and after 45 days of contract agreement</p> <ul style="list-style-type: none"> <li>• PAN/VAT registration certificate of Nepal</li> <li>• Temporary Construction License</li> </ul> <p>But, Resident foreign bidder shall submit PAN/VAT certificate and tax clearance certificate or proof of submission of Income Return last fiscal year 2077/78 (2020/21 A.D.) at the time of Bid Submission.</p> <p>Further,</p> <p>In case of a Joint Venture, a letter of intent to form a Joint Venture or Joint Venture agreement which is legally binding on all partners shall be submitted at the time of Bid Submission. However, in case bid submitted by a JV with letter of intent to form a Joint Venture is successful bid, the specified Form of JV Agreement shall be signed as to be legally binding on all partners and submitted at the time of contract agreement.</p> |
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## B. Contents of Bidding Documents

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| <p><b>ITB 6.1</b></p> | <p>Rearrange the sections in the following manner:</p> <p><b><u>Volume I:</u></b></p> <p>Invitation for Bids (IFB)</p> <p>Section I: Instructions to Bidders (ITB)</p> <p>Section II: Bid Data Sheet (BDS)</p> <p>Section III: Evaluation and Qualification Criteria</p> <p>Section IV: Bidding Forms</p> <p>Section V: Eligible Countries</p> <p>Section VII: General Conditions of Contract (GCC)</p> |
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|                | <p>Section VIII: Special Conditions of Contract (SCC)</p> <p>Section IX: Contract Forms</p> <p><b><u>Volume II:</u></b></p> <p>Section VI: Employer's work requirements and drawings</p> <p><b><u>Volume III</u></b></p> <p>Section IV: Bill of Quantities (BOQ)</p>  |
| <b>ITB 7.1</b> | <p>For <b><u>Clarification Purposes</u></b> only, the Employer's address is:</p> <p>Attention: <a href="#">The Director, Grid Operation Department</a></p> <p>Street Address: <a href="#">Minbhawan, Kathmandu</a></p> <p>Country: Nepal</p> <p>Telephone: <a href="#">+ 977 (01) 4106919, 4106782, 4106965</a></p> <p><a href="#">Facsimile number: + 977 (01) 4106884</a></p> <p>Electronic mail address: <a href="mailto:gridoperation@nea.org.np">gridoperation@nea.org.np</a></p> <p>Time for request: Requests for clarification should be received by the Employer no later than 15 days prior to the deadline for submission of bids.</p> |
| <b>ITB 7.2</b> | <p>Add the following second paragraph: Under Sub-clause 7.2.</p> <p>The Employer, upon the request from the potential bidders, may arrange the group site visit immediately after the Pre-bid conference. However, vehicle for site visit of the bidder and other logistics will be arranged by bidders themselves.</p>   |
| <b>ITB 7.4</b> | <p>A Pre-Bid meeting shall take place at the following date, time and place:</p> <p><a href="#">Date: 12<sup>th</sup> May 2022</a></p> <p><a href="#">Time: 12:00 Noon. (Nepal Standard Time)</a></p> <p><a href="#">Grid Operation Department</a></p> <p><a href="#">Nepal Electricity Authority</a></p> <p><a href="#">Minbhawan, Kathmandu</a></p> <p><a href="#">Telephone: + 977 (01) 4106919, 4106782, 4106965</a></p> <p>The Venue may change in which case Employer will notify Electronically to all the bidders who purchased the Bidding document.</p>   |



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| <b>ITB 7.5</b> | Time period to submit any questions in writing for the purpose of clarification at the Pre-Bid meeting is: <b>3 days prior to Pre-Bid meeting</b> |
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### C. Preparation of Bids

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| <b>ITB 10.1</b>     | The language of the bid is: <b>English</b>   |
| <b>ITB 11.2 (i)</b> | <p>The Bidder shall submit with its bid the following additional documents:</p> <ol style="list-style-type: none"> <li>1. Notarized Company legal Registration Certificate.</li> <li>2. Copy of Business Registration Certificate</li> <li>3. Notarized JV agreement if bidder is not a single firm or single entity.</li> <li>4. Work Completion Certificate (on the letter head of the End-User) for all relevant Projects completed in the last 10 years with contact person's address and Tel. no.</li> <li>5. Audited Balance Sheet for the last three years</li> <li>6. Manufacturers' Authorization Letter for major items as mentioned in Section III Evaluation and Qualification Criteria</li> <li>7. VAT Registration Certificate of the bidder</li> <li>8. Test Certificate for major items as mentioned in Section III Evaluation and Qualification Criteria</li> <li>9. Original copies of original bidding documents with each page signed</li> <li>10. Details in respect of Local Agent</li> </ol> <p>If a foreign bidder has engaged a Nepalese agent, it will be required to give the following details in its bid as per the format enclosed in the Bidding Documents:</p> <ol style="list-style-type: none"> <li>i) The name and address of the local agent;</li> <li>ii) What Service the agent renders; and</li> <li>iii) The fixed amount of remuneration for the agent included in the offer;</li> </ol> <p>The agency commission shall be indicated in the space provided for in the Price Schedule and will be paid to the Bidder's agent in Nepal in Nepalese Rupees using the Nepal Rastra Bank (NRB) Exchange (Buying) Rate ruling on the date of notification of award and shall not be subject to any escalation or any further exchange variations.</p> |
| <b>ITB 11.3 (b)</b> | In accordance with ITB 12 and ITB 14, the following schedules shall be submitted with the bid, including the priced Bill of Quantities for Unit Rate Contracts and Schedule of Prices for lump sum contracts: <b>NONE</b>  |
| <b>ITB 11.3 (d)</b> | The Bidder shall submit with its Price Bid the following additional documents: None  |
| <b>ITB 13.1</b>     | Alternative bids <b>shall not be</b> permitted.  |



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| ITB 13.2     | Alternative times for completion <b>shall not be</b> permitted.   |
| ITB 13.4     | Alternative technical solutions shall be permitted for the following parts of the Works: <b>"Not Applicable"</b>  |
| ITB 14.6     | The prices quoted by the Bidder "shall not be" subject to adjustment during the performance of the contract, it is the fixed price contract.  |
| ITB 15.1     | <p>The unit rates and the prices shall be quoted by the bidder entirely in:</p> <p><b>Nepalese Rupees (NPR) or up to three convertible foreign currencies</b></p> <p><b>included in daily publication of Nepal Rastra Bank foreign currency</b></p> <p><b>exchange rate.</b></p> <p>It is further instructed,</p> <p>(a) Price Schedule No. 1 (Plant, and Mandatory Spares Parts supplied from abroad)</p> <ul style="list-style-type: none"> <li>The prices shall be quoted either in the currency of Nepalese Rupees (NPR) or <b>up to three convertible foreign currencies</b> only.</li> </ul> <p>(b) Price Schedule No. 2 (Plant and Mandatory Spares Parts supplied Within Employer's Country)</p> <ul style="list-style-type: none"> <li><b>The prices shall be quoted in Nepalese Rupees (NPR) only.</b></li> </ul> <p>(c) Price Schedule No. 3 (Design Services)</p> <ul style="list-style-type: none"> <li><b>The prices shall be quoted</b> either in the currency of Nepalese Rupees (NPR) or <b>up to three convertible foreign currencies</b> only.</li> </ul> <p>(d) Price Schedule No 4 (Construction and Installation Services)</p> <ul style="list-style-type: none"> <li><b>The prices shall be quoted in Nepalese Rupees (NPR) only.</b></li> </ul> |
| ITB 18.1     | The bid validity period shall be: <b>One Hundred Twenty (120) days.</b>   |
| ITB 19.1     | The Bidder shall furnish a bid security, from Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law with a minimum of <b>USD 367,377.00</b> or an equivalent amount in NPR @exchange rate (sell) of Nepal Rastra Bank 30 Days prior to the Deadline for Bid Submission, which shall be valid for 30 days beyond the validity period of the bid. If the bank guarantee is issued by a foreign bank, it shall be counter guaranteed by Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law in Nepal.  |
| ITB 19.2 (b) | <p>Account Name: <b>NEA Transmission Directorate</b></p> <p>Bank Name: <b>Kumari Bank Limited</b></p> <p>Bank Address: <b>Putalisadak, Kathmandu</b></p>  |



|                 |  |
|-----------------|--|
|                 | Account Number: <b>0010002263400001</b><br><br>Bid security shall be in the form of <u>unconditional bank guarantee</u> .  |
| <b>ITB 20.1</b> | Bidders shall have only the option of submitting their bids - electronically (in uploadable format). No bid shall be accepted by mail or by hand or by courier.<br><br>The electronic bid submission procedures shall be as per latest e-GP Guidelines of PPMO.  |
| <b>ITB 20.2</b> | The written confirmation of authorization to sign on behalf of the Bidder shall indicate:<br><br>(a) The name and description of the documentation required to demonstrate the authority of the signatory to sign the Bid such as a Power of Attorney (either notarized or attested by the appropriate authority in the Bidder's home country).; and<br><br>(b) In the case of Bids submitted by an existing or intended JV, an undertaking signed by all parties (i) stating that all parties shall be jointly and severally liable, and (ii) nominating a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the JV during the bidding process and, in the event the JV is awarded the Contract, during contract execution.<br><br>The Power of Attorney in (a) and (b) above shall be notarized. |

#### D. Submission and Opening of Bids

| ITB 21.1    | Bidders shall submit their bids electronically. No bid shall be accepted by mail or by hand or by courier. The bids submitted electronically are considered as original. However, if required as per ITB 27, the Bidder shall be required to submit original Bid Security letter/documents and other clarifications as required.  |             |         |  |      |          |             |         |   |                         |           |     |   |                               |           |     |   |                                       |           |     |   |                  |           |     |   |   |           |     |
|-------------|---|-------------|---------|--|------|----------|-------------|---------|---|-------------------------|-----------|-----|---|-------------------------------|-----------|-----|---|---------------------------------------|-----------|-----|---|------------------|-----------|-----|---|---|-----------|-----|
| ITB 21.1(b) | <b>Correct the Table as follows:</b><br><br><b>a. Technical Bid:</b> <table><tr><th>S.N.</th><th>Document</th><th>Requirement</th><th>Remarks</th></tr><tr><td>1</td><td>Letter of Technical Bid</td><td>Mandatory</td><td>PDF</td></tr><tr><td>2</td><td>Bid Security (Bank Guarantee)</td><td>Mandatory</td><td>PDF</td></tr><tr><td>3</td><td>Company/Firm Registration Certificate</td><td>Mandatory</td><td>PDF</td></tr><tr><td>4</td><td>VAT registration</td><td>Mandatory</td><td>PDF</td></tr><tr><td>5</td><td>Business Registration (Licence) Certificate</td><td>Mandatory</td><td>PDF</td></tr></table> |             |         |  | S.N. | Document | Requirement | Remarks | 1 | Letter of Technical Bid | Mandatory | PDF | 2 | Bid Security (Bank Guarantee) | Mandatory | PDF | 3 | Company/Firm Registration Certificate | Mandatory | PDF | 4 | VAT registration | Mandatory | PDF | 5 | Business Registration (Licence) Certificate | Mandatory | PDF |
| S.N.        | Document  | Requirement | Remarks |  |      |          |             |         |   |                         |           |     |   |                               |           |     |   |                                       |           |     |   |                  |           |     |   |   |           |     |
| 1           | Letter of Technical Bid   | Mandatory   | PDF     |  |      |          |             |         |   |                         |           |     |   |                               |           |     |   |                                       |           |     |   |                  |           |     |   |   |           |     |
| 2           | Bid Security (Bank Guarantee)   | Mandatory   | PDF     |  |      |          |             |         |   |                         |           |     |   |                               |           |     |   |                                       |           |     |   |                  |           |     |   |   |           |     |
| 3           | Company/Firm Registration Certificate   | Mandatory   | PDF     |  |      |          |             |         |   |                         |           |     |   |                               |           |     |   |                                       |           |     |   |                  |           |     |   |   |           |     |
| 4           | VAT registration  | Mandatory   | PDF     |  |      |          |             |         |   |                         |           |     |   |                               |           |     |   |                                       |           |     |   |                  |           |     |   |   |           |     |
| 5           | Business Registration (Licence) Certificate   | Mandatory   | PDF     |  |      |          |             |         |   |                         |           |     |   |                               |           |     |   |                                       |           |     |   |                  |           |     |   |   |           |     |



|  |   |  |               |  |
|--|---|--|---------------|--|
|  | 6   | Tax clearances certificate or evidence of tax return submission  | Mandatory     | PDF                                    |
|  | 7   | Power of Attorney of Bid signatory   | Mandatory     | PDF                                    |
|  | 8   | Bank Voucher for cost of bid document  | Mandatory     | PDF                                    |
|  | 9   | Joint venture agreement  | Mandatory     | PDF, Mandatory in case of JV Bids Only |
|  | 10  | Qualification Information  | Mandatory     | Web Forms (Experience, Turnover, etc.) |
|  | 11  | Manufacturer authorization letter for major equipment mentioned in clause 2.7 of Section 3. Evaluation and qualification Criteria. | Mandatory     | PDF color scan                         |
|  | 12  | Functional Guarantee   | Mandatory     | PDF                                    |
| <b>Price Bid:</b>  |   |  |               |  |
|  | S.N.  | Document   | Requirement   | Remarks                                |
|  | 1   | Letter of Price Bid  | Mandatory     | PDF                                    |
|  | 2   | Applicable Price Adjustment Table  | If applicable | Not Applicable                         |
|  | 3   | Completed BOQ or Price Schedule  | Mandatory     | PDF/Web Forms*                         |
| <p>*Bidder shall get <b>pdf format</b> of BOQ in Bid document uploaded by Employer. They have to fill it as per instruction, put name, signature designation stamp on it and upload it as Price Bid with letter of Price Bid.</p> <p><i>Note: The documents specified as "Mandatory" should be included in e-submission and non-submission of the documents shall be considered as non-responsive bid.</i></p> |   |  |               |  |
| <b>ITB 22.1</b>  | <p>The deadline for bid submission is:</p> <p>Date: 10<sup>th</sup> June 2022</p> <p>Time: 12:00 Hrs (Noon) (Server time of PPMO)</p> |  |               |  |



|                 |  |
|-----------------|--|
|                 | Note: <i>No hard copy submission permitted.</i>  |
| <b>ITB 25.1</b> | <p>The bid opening of Technical Bids shall take place at</p> <p>Place: <b>Grid Operation Department</b></p> <p>Street Address: <b>Meen Bhawan, New Baneshwor</b></p> <p>City: <b>Kathmandu</b></p> <p>Country: <b>Nepal</b></p> <p>The date &amp; time for bid opening is:</p> <p>Date: <b>10<sup>th</sup> June 2022</b></p> <p>Time: <b>13:00 Hrs (Local)</b></p> |

### E. Evaluation and Comparison of Bids

|                        |   |
|------------------------|---|
| <b>ITB 33.1</b>        | <p>The currency that shall be used for bid evaluation and comparison purposes to convert all bid prices if permitted and expressed in various currencies into a single currency is: <b>NPR</b></p> <p>The source of exchange rate shall be: <b>Nepal Rastra Bank</b></p> <p>The date for the exchange rate shall be: <b>30 days prior to the deadline for submission of bids.</b></p> |
| <b>ITB 34.1</b>        | <p>Domestic preference <b><i>shall</i></b> apply for domestic bidders.</p> <p>Margin of preference of <b>5%</b> if applicable to the domestic bidders.</p> <p><b>The application methodology shall be as stipulated in Section 3 (Evaluation and Qualification Criteria).</b></p>   |
| <b>ITB 35.1</b>        | <p>Contractor's proposed subcontracting: Maximum percentage of subcontracting permitted is: <b>25% of the total contract amount</b></p>   |
| <b>ITB 36.1</b>        | <p>Also add "The Employer shall only evaluate 'Price Bid' which are uploaded as per instruction in ITB 21.1 (b) III and relevant clauses".</p>  |
| <b>ITB 36.5</b>        | <p>The amount of the performance security be increased by <b>Eight (8) percent</b> of the quoted bid price.</p>   |
| <b>ITB 41.1</b>        | <p><b>Letter of Commitment for Bank's Undertaking for Line of Credit shall be of USD 1.6 Million or an equivalent amount in NPR @exchange rate of Nepal Rastra Bank 30 Days prior to the Deadline for Bid Submission.</b></p>   |
| <b>Add:<br/>ITB 44</b> | <p>The Incoterm for quoting plant to be supplied from abroad is: <b>CIP- Project Site as per BOQ</b></p> <p>The Incoterm for quoting plant manufactured within the Employer's country is: <b>EXW.</b></p>   |



## Section 3 - Evaluation and Qualification Criteria

Table of Criteria

|   |               |
|---|---------------|
| <b>1. Evaluation .....</b>  | <b>3-2</b>    |
| <b>1.1 Adequacy of Technical Proposal .....</b>                     | <b>3-2</b>    |
| <b>1.2 Multiple Contracts .....</b>                                 | <b>3-2</b>    |
| <b>1.3 Completion Time .....</b>                                    | <b>3-2</b>    |
| <b>1.4 Alternative Technical Solutions.....</b>                     | <b>3-2</b>    |
| <b>1.5 Domestic Preference .....</b>                                | <b>3-2</b>    |
| <b>1.6 Quantifiable Nonconformities, Errors and Omissions .....</b> | <b>3-2</b>    |
| <b>2. Qualification.....</b>  | <b>3-3</b>    |
| <b>2.1 Eligibility .....</b>  | <b>3-4</b>    |
| 2.1.1 Conflict of Interest .....                                    | 3-4           |
| 2.1.2 Government-owned Entity.....                                  | 3-4           |
| 2.1.3 UN Eligibility .....  | 3-5           |
| 2.1.4 VAT and PAN Registration.....                                 | 3-5           |
| <b>2.2 Pending Litigation .....</b>                                 | <b>3-5</b>    |
| 2.2.1 Pending Litigation.....                                       | 3-6           |
| <b>2.3 Financial Situation .....</b>                                | <b>3-6</b>    |
| 2.3.1 Historical Financial Performance .....                        | 3-6           |
| 2.3.2 Average Annual Construction Turnover.....                     | 3-7           |
| 2.3.3 Financial Resources.....                                      | 3-7           |
| <b>2.4 Experience .....</b>   | <b>3-1</b>    |
| 2.4.1 General Construction Experience .....                         | 3-8           |
| 2.4.2 Specific Construction Experience .....                        | 3-8           |
| (a) Contracts of Similar Size and Nature.....                       | 3-8           |
| (b) Construction Experience in Key Activities.....                  | 3-9           |
| <b>2.5 Personnel .....</b>  | <b>3-9</b>    |
| <b>2.6 Equipment.....</b>   | <b>3-10</b>   |
| <b>2.7 Manufacturers/ Subcontractors.....</b>                       | <b>Error!</b> |

Bookmark not defined.





## 1. Evaluation

In addition to the criteria listed in ITB 36.2 (a) – (f) the following criteria shall apply:

### 1.1 Adequacy of Technical Proposal

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity, to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section 5 (Works Requirements).

### 1.2 Multiple Contracts

Pursuant to Sub-Clause 36.4 of the Instructions to Bidders, if Works are grouped in multiple contracts, evaluation will be as follows:

**Not Applicable**

### 1.3 In Case, other than Multiple Contracts

The contracts will be awarded to the Bidder or Bidders offering the lowest evaluated cost to the Employer, subject to the selected Bidder(s) meeting the required qualification which shall be the sum of the minimum requirements for respective individual contracts as specified under items Required Bid Capacity as per 2.3.3. Under this case, Contract shall be awarded based on Least Cost Combination to the Employer.

### 1.4 Completion Time

An alternative Completion Time, if permitted under ITB 13.2, will be evaluated as follows:

**Not Applicable**

### 1.5 Alternative Technical Solutions

Alternative technical solutions, if permitted under ITB 13.4, will be evaluated as follows:

**Not Applicable**

### 1.6 Domestic Preference

In comparing domestic bids with foreign bids, a Domestic preference as per ITB 34.1 shall be granted to eligible domestic contractors, as defined below, in accordance with the following provisions.

(a) For application of domestic preference, all responsive bids shall first be classified into the following two categories:

- (i) **Category I:** Bids offered by domestic contractors (domestic bidder firms, institutions, or company either in single or in joint venture (all partners)); and
- (ii) **Category II:** Bids offered by International firms, institutions or company or collaboration with domestic firms, institutions, company



- (b) The lowest evaluated bid of each category shall then be determined by comparing all evaluated bids in each category among themselves.
- (c) Such lowest evaluated bids shall next be compared with each other and if, as a result of this comparison, a bid from **Category I** is found to be the lowest, it shall be selected for the award of contract.
- (d) If, however, as a result of the comparison under (c) above, the lowest bid is found to be from **Category II**, it shall be further compared with the lowest evaluated bid from **Category I**. For the purpose of this further comparison only an upward adjustment (domestic preference) shall be made to the lowest evaluated bid price of **Category II** by **adding an amount equal to Five (5%)** of the bid price. If, after such comparison, the **Category I** bid is determined to be the lowest, it shall be selected for the award of contract; if not, the lowest evaluated bid from **Category II** shall be selected.

### 1.7 Quantifiable Nonconformities, Errors and Omissions

The evaluated amount of quantifiable nonconformities, errors and/or omissions shall be determined by ascertaining the price of such effect on an equal basis by adjusting the same to the quoted price of the bid. A bid having minor deviations and having no material deviation to cause any serious effect upon the scope, quality, characteristics, terms and conditions, performance or any other requirements stated in the bidding documents and acceptable to the Employer can be considered to be substantially responsive.

### 1.8 Economic Evaluation

The following factors and methods will apply:

#### (a) Time Schedule:

The plant and equipment covered by this bidding are required to be shipped, installed and the successful completion of the Facilities shall have to be completed within **24 Months** from the effective date of the Contract. No credit will be given to earlier completion. **Bids offering completion beyond the named period will be rejected.** Bidder shall also consider provision of work program stated in GCC clause 18 to base their prices.

#### (b) Operating and Maintenance Costs: NA

#### (c) Functional Guarantees of the facilities:

##### (i) Capitalization of Transformer Losses

When evaluating the individual bid received from various Bidders, the transformer shall be evaluated for the cost of losses based on the following relation:

$$P_E = P_b + K_L * L_L + K_{NL} * L_{NL} + K_{CL} * L_{CL}$$

Where,

|          |   |   |
|----------|---|---|
| $P_E$    | = | Evaluated price                           |
| $P_b$    | = | Bid price                                 |
| $K_L$    | = | Value of load loss                        |
| $K_{NL}$ | = | Value of no-load loss                     |
| $L_L$    | = | Guaranteed load losses at rated current   |
| $L_{NL}$ | = | Guaranteed no-load loss at rated current  |
| $K_{CL}$ | = | Value of Cooler loss                      |
| $L_{CL}$ | = | Guaranteed Cooler losses at rated current |



## (ii) Guaranteed Transformer losses.

The transformer losses will be capitalized as follows for evaluation purpose:

- a) No load losses: US\$ 4684 per kW
- b) Load losses: US\$ 1180 per kW
- c) Losses associated cooling fan load: US\$ 393 per kW

### Guaranteed values not reached.

If the individual losses of a power transformer as measured during test exceeds the values Guaranteed in the Bid, then for each kilowatt of losses in excess of the losses guaranteed, an amount at the rates of twice the rates specified above for no-load losses and load-losses shall be deducted from the Contract Price of the successful Bidder.

### Performance Guarantee

The performance figures quoted on Technical Data Sheet shall be guaranteed within the tolerances permitted by relevant standards listed under Part-II, Employer's Requirement, and shall become a part of the successful Bidder's Contract. In case of loss capitalization, no tolerance shall be permitted for the guaranteed value. The transformer will be rejected, if the measured no-load and load losses exceed the guaranteed value by over 15% provided that the total losses do not exceed 10% as specified.

(d) Work, services, facilities, etc., to be provided by the Employer: None

## 2. Qualification

It is the legal entity or entities comprising the Bidder, and not the Bidder's parent companies, subsidiaries, or affiliates, that must satisfy the qualification criteria described below.

### 2.1 Eligibility

| Criteria    | Compliance Requirements |                       |              |             | Documents               |
|-------------|-------------------------|-----------------------|--------------|-------------|-------------------------|
| Requirement | Single Entity           | Joint Venture         |              |             | Submission Requirements |
|             |                         | All Partners Combined | Each Partner | One Partner |                         |

#### 2.1.1 Conflict of Interest

|   |                       |   |                       |                |               |
|---|-----------------------|---|-----------------------|----------------|---------------|
| No conflicts of interest in accordance with ITB Sub-Clause 4.3. | must meet requirement | existing or intended JV must meet requirement | must meet requirement | not applicable | Letter of Bid |
|---|-----------------------|---|-----------------------|----------------|---------------|

#### 2.1.2 Government-owned Entity

|   |                       |                                   |                       |                |                            |
|---|-----------------------|-----------------------------------|-----------------------|----------------|----------------------------|
| Applicant required to meet conditions of ITB Sub- | must meet requirement | existing or intended JV must meet | must meet requirement | not applicable | Forms ELI -1, ELI - 2 with |
|---|-----------------------|-----------------------------------|-----------------------|----------------|----------------------------|



|             |  |             |  |  |             |
|-------------|--|-------------|--|--|-------------|
| Clause 4.5. |  | requirement |  |  | attachments |
|-------------|--|-------------|--|--|-------------|

### 2.1.3 Government/Development Partner Eligibility

|  |                       |   |                       |                |                         |
|--|-----------------------|---|-----------------------|----------------|-------------------------|
| Not having been declared ineligible by government/Development Partner, as described in ITB Sub-Clause 4.4. | must meet requirement | existing or intended JV must meet requirement | must meet requirement | not applicable | Letter of Technical Bid |
|--|-----------------------|---|-----------------------|----------------|-------------------------|

### 2.1.4 UN Eligibility

|   |                       |   |                       |                |               |
|---|-----------------------|---|-----------------------|----------------|---------------|
| Not having been declared ineligible based on a United Nations resolution or Employer's country law, as described in ITB Sub-Clause 4.7. | must meet requirement | existing or intended JV must meet requirement | must meet requirement | not applicable | Letter of Bid |
|---|-----------------------|---|-----------------------|----------------|---------------|

### 2.1.5 VAT and PAN Registration

|                    |  |                       |   |                       |                |  |
|--------------------|--|-----------------------|---|-----------------------|----------------|--|
| a. Domestic Bidder | Bidders required to meet conditions of ITB Sub-Clause 4.9. | must meet requirement | existing or intended JV must meet requirement | must meet requirement | not applicable | PAN and VAT registration certificate   |
| b. Foreign Bidder  | Bidders required to meet conditions of ITB Sub-Clause 4.9. | must meet requirement | existing or intended JV must meet requirement | must meet requirement | not applicable | Declaration to submit PAN and VAT Registration Certificate at the time of Contract agreement |

### 2.2 Pending Litigation

| Criteria    | Compliance Requirements |               | Documents               |
|-------------|-------------------------|---------------|-------------------------|
| Requirement | Single Entity           | Joint Venture | Submission Requirements |



|  |  |                              |                     |                    |  |
|--|--|------------------------------|---------------------|--------------------|--|
|  |  | <b>All Partners Combined</b> | <b>Each Partner</b> | <b>One Partner</b> |  |
|--|--|------------------------------|---------------------|--------------------|--|

### 2.2.1 Pending Litigation

|  |  |                |  |                |              |
|--|--|----------------|--|----------------|--------------|
| All pending litigation shall be treated as resolved against the Applicant and so shall in total not represent more than 50 percent of the Applicant's net worth. | must meet requirement by itself or as partner to past or existing JV | not applicable | must meet requirement by itself or as partner to past or existing JV | not applicable | Form LIT – 1 |
|--|--|----------------|--|----------------|--------------|

**Note:**

The Employer reserves the right to verify the pending litigation with respective department.

### 2.3 Financial Situation

| Criteria    | Compliance Requirements |                       |              | Documents               |
|-------------|-------------------------|-----------------------|--------------|-------------------------|
| Requirement | Single Entity           | Joint Venture         |              |                         |
|             |                         | All Partners Combined | Each Partner | One Partner             |
|             |                         |                       |              | Submission Requirements |

### 2.3.1 Historical Financial Performance

|   |                       |                |                       |                |                               |
|---|-----------------------|----------------|-----------------------|----------------|-------------------------------|
| Submission of audited balance sheets and income statements, for the last three (3) years to demonstrate the current soundness of the applicant's financial position. As a minimum, a Bidder's net worth calculated as the difference between total assets and total liabilities should be positive. | must meet requirement | not applicable | must meet requirement | not applicable | Form FIN - 1 with attachments |
|---|-----------------------|----------------|-----------------------|----------------|-------------------------------|



### 2.3.2 Average Annual Construction Turnover

|   |                       |                       |                                  |                                  |              |
|---|-----------------------|-----------------------|----------------------------------|----------------------------------|--------------|
| Minimum average annual construction turnover of <b>9.61 MUSD</b> , calculated as total certified payments received for contracts in progress or completed, within best three years out of last ten fiscal years. <i>(Bidder shall submit audited financial reports for best three years only)</i> | must meet requirement | must meet requirement | must meet 25% of the requirement | must meet 40% of the requirement | Form FIN - 2 |
|---|-----------------------|-----------------------|----------------------------------|----------------------------------|--------------|

### 2.3.3 Required Bid Capacity

|  |                       |                       |                                  |                                  |               |
|--|-----------------------|-----------------------|----------------------------------|----------------------------------|---------------|
| The bidding capacity of the bidder should be equal to or more than the <b>12.81 MUSD</b> | must meet requirement | must meet requirement | must meet 25% of the requirement | must meet 40% of the requirement | Form FIN -3,4 |
|--|-----------------------|-----------------------|----------------------------------|----------------------------------|---------------|

Note:

- Bidders shall fill the forms as mentioned above but notarized copy of the audit report is mandatory to verify the forms. The audited balance sheet must have the sign of the auditor with the stamp of the firm. For e-submission of bids, Xeroxed copy of audit report is not advised to be uploaded, bidders are to upload the original audit report. The Cover page of the Auditor's information and Contact Address (Phone no. & the mail address) shall be present.
- If the Turnover submitted by the bidder is in the name of a Joint Venture in the past, the bidder must submit the Joint Venture Agreement (notarized in case of Hard Copy bid, original scanned Copy for e-submission), stating the % of JV for the calculation of the turnover of the respective bidder.
- For the Line of Credit the letter from the bank must be unconditional.
- Due to limitations on file size for the e-submission bidders are requested to submit only the necessary & related files to qualify the above conditions.

## 2.4 Experience

| Criteria    | Compliance Requirements |               | Documents               |
|-------------|-------------------------|---------------|-------------------------|
| Requirement | Single Entity           | Joint Venture | Submission Requirements |



|  |  | All<br>Partners<br>Combined | Each<br>Partner | One<br>Partner |  |
|--|--|-----------------------------|-----------------|----------------|--|
|--|--|-----------------------------|-----------------|----------------|--|

#### 2.4.1 General Construction Experience

|   |                       |                |                       |                |             |
|---|-----------------------|----------------|-----------------------|----------------|-------------|
| Work Experience under contracts in the role of contractor, subcontractor, or management contractor for at least the last 5 years prior to the applications submission deadline. | must meet requirement | not applicable | must meet requirement | not applicable | Form EXP -1 |
|---|-----------------------|----------------|-----------------------|----------------|-------------|

#### 2.4.2 Specific Experience

##### (a) Contracts of Similar Size and Nature

|  |                       |                |                       |                       |                 |
|--|-----------------------|----------------|-----------------------|-----------------------|-----------------|
| i) Participation as a prime contractor, Management contractor or Subcontractor, in at least 1 (one) EPC/Turnkey/ DB Contract within the last 10 (Ten) years, with a value of at least <b>US\$ 5.12 Million</b> that have been successfully or substantially completed and that are similar to the proposed works.<br><br>The similarity of the Bidder's participation shall be based on Design, Supply, Installation and Commissioning of 110 kV or above voltage Transformer bay. | must meet requirement | not applicable | not applicable        | must meet requirement | Form EXP - 2(a) |
| ii) Participation as a prime contractor, Management contractor or Subcontractor, in at least 1 (one) or by adding maximum of 2 (two) contract within the last ten (10) years, with a value of at least <b>US\$ 3.20 Million</b> that have been successfully or substantially completed.  | must meet requirement | not applicable | must meet requirement | not applicable        | Form EXP - 2(a) |





**Note:**

For Contracts under which the Bidder participated as a joint venture member, only the Bidder's proportionate share value within the JV shall be considered.

**(b) Experience in Key Activities**

|   |                            |                            |                |                |                 |
|---|----------------------------|----------------------------|----------------|----------------|-----------------|
| For the above or other contracts executed during the period stipulated in 2.4.2(a) above, a minimum construction experience in the following key activities:                        |                            |                            |                |                |                 |
| have designed, supplied, installed, tested and commissioned of at least 3 (Three) no. of Power Transformer of 100 MVA Three Phase 110 kV or higher capacity at higher voltage level | must meet all requirements | must meet all requirements | not applicable | not applicable | Form EXP-2(b-i) |

**Note:**

1. In case bidder is a holding company, the financial position criteria referred in above shall be of that holding company only (i.e excluding its subsidiary/ group companies). In case bidder is a subsidiary of a holding company, financial position criteria referred to in clause 2.3.1, 2.3.2 and 2.3.3 above shall be of that subsidiary company only (i.e excluding its holding company). **The lead partner must meet, not less than 40% of the Financial Position criteria referred to in clause 2.3.2 and 2.3.3 above.**
2. For Company formed by merger/de-merger of two or more companies or divisions of such companies, the financial data of the company shall be considered for the completed financial year for which it has been in existence (if financial results are available) and for balance period financial data of related business of Constituents (duly certified by the Company Secretaries of the constituents or a public accountant) shall be considered.
3. To substantiate the above qualification, the Bidder must submit certificate (notarized) from clients (end-user certificates) for all number of projects specified as above clearly indicating the Contract amount, project size, scope of work. In case of works executed under a contract that had been awarded on a Joint Venture, the experience of individual Joint Venture partner shall be considered limited to the scope/share of that partner under the said contract.
4. In case bidder is a holding company, the specific experience referred to in clause 2.4.2 (a) and (b) above shall be of that holding company only (i.e. excluding its subsidiary/group companies). In case bidder is a subsidiary of a holding company, the technical experience referred to in clause 2.4.2 (a) and (b) above shall be of that subsidiary company only (i.e. excluding its holding companies).
5. Successful operation means certificate issued by the Employer certifying the operation without any adverse remark.
6. For reckoning the sub-contractors experience, completion certificate from end user, completion certificate from the concerned Project Authority is only acceptable and those documents shall be duly notarized.
7. In case, the above required Financial, Experiences and other relevant documents are in other than English language, these documents shall be translated to English and Duly notarized.



## 2.5 Personnel

The Bidder must demonstrate that it has the personnel for the key positions that meet the following requirements:

| No. | Position                 | Specific works Experience   |
|-----|--------------------------|---|
| 1   | Project Manager          | A graduate Engineer with minimum 10 years of experience and specifically 5 years or more in 110 kV or above substation projects |
| 2.  | Electrical Engineer      | A graduate in Electrical Engineer with minimum 5 years of site supervision experience in 110 kV or above substation projects.   |
| 3.  | Project Engineer (Civil) | A graduate in Electrical Engineer with minimum 5 years of site supervision experience in 110 kV or above substation projects.   |

In case the bidder proposes to consider Personnel that may be spared from committed/ongoing contracts for evaluation, the bidder shall provide details of personnel which will be spared from such committed/ongoing contracts based on the physical progress at the date of bid submission. The details so submitted by the bidder and the physical progress of the ongoing contracts only the spared personnel shall be taken into the consideration during evaluation.

The Bidder shall provide details of the proposed personnel and their experience records in the relevant Information Forms included in Section 4 (Bidding Forms).

**Note:** The bidder shall make sure the personnel declared for the position above shall not be altered in any case.

## 2.6 Equipment

The Bidder must demonstrate that it has the key equipment listed hereafter:

| Item No. | Equipment Type and Characteristics           | Min. Number Required |
|----------|--|----------------------|
| 1        | Oil filter machine( $\geq 80$ kV)            | 1                    |
| 2        | Transformer Turns Ratio Testing Equipment    | 1                    |
| 3        | Insulation Resistance Tester                 | 1                    |
| 4        | Protection testing and calibration equipment | 1                    |
| 5        | Relay Testing Kit                            | 1                    |

In case the Bidder proposes to consider Equipment that may be spared from committed/ongoing contracts for evaluation, the Bidder shall provide details of Equipment which will be spared from committed / ongoing contracts clearly demonstrating the availability of such equipment with respect to the physical progress of the ongoing contracts on the date of bid submission. Based on the details so submitted by the Bidder, only the spared equipment proposed for the contract shall considered for evaluation.

In case of Equipments to be leased/hired the same procedures as mentioned above shall apply. The Bidder must demonstrate that it has the required equipments and bidder shall provide details of the proposed equipments in the relevant information forms included in Section 4 (Bidding Forms).



The Bidder/Lease Owner shall be solely responsible for the data provided. However, this shall not limit the right of employer to verify the authenticity of submitted information. The Bidder shall provide further details of proposed items of equipment using the relevant Form in Section 4 (Bidding Forms)

## 2.7 Subcontractors / Manufacturers

Subcontractors or Manufacturers for the following major items of plant and services must meet the following minimum criteria, herein listed for that item. Failure to comply with this requirement will result in rejection of the subcontractor but not the Bidder.

| Item No. | Description of Item                                | Minimum Criteria to be met   | Documents Submission Requirements |
|----------|--|--|-----------------------------------|
| 1        | Power Transformer (132 kV or higher voltage class) | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied Power Transformer of capacity 100 MVA <b>Three Phase</b> or above, 110 kV or higher Voltage Class, at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least One (1) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications</p> <p>iv) Must submit the type test report carried out as per IEC in <b>Short-Circuit Testing Liaison (STL)</b> - Accredited Laboratory <b>for the identical item in same rating and construction</b> (for all type of transformers as proposed in this bid).</p> <p>v) Must have successfully carried out the complete type test over last 10 years as per IEC in Short-Circuit Testing Liaison (STL) - Accredited Laboratory including Dynamic Short Circuit (DSC) test on 132 kV Voltage class, three phase 100 MVA or higher rating power transformer and shall enclose the relevant Test Report /certificate along with bid. If the manufacturer had not successfully carried out Complete Type Test including Dynamic Short Circuit Test on 132 kV Voltage class, three phase 100 MVA or higher rating power transformer as per IEC in Short-Circuit Testing Liaison (STL) - Accredited Laboratory as on the originally scheduled date of bid opening, bidder have to submit undertaking letter along with bid to carry out the Dynamic Short Circuit test on 132 kV Voltage class, three phase 100 MVA or higher rating power transformer from offered Manufacturer without any extra cost to the Client / Employer in Short-Circuit Testing Liaison (STL)-Accredited Laboratory.</p> <p>vi) OLTC &amp; its Control equipment must necessarily be only from MR Germany, ABB Sweden or equivalent.</p> | Form EXP-3                        |



| Item No. | Description of Item        | Minimum Criteria to be met  | Documents Submission Requirements |
|----------|----------------------------|---|-----------------------------------|
| 2        | 132kV SF6 Circuit Breaker  | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied SF6 Circuit Breaker of 132kV or higher Voltage level at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least One (1) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications.</p> <p>iv) Must submit the type test report carried over last 10 years by reputed independent accredited testing laboratory.</p>  |                                   |
| 3        | 132kV Current Transformer  | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied Current Transformer of 132 kV or higher Voltage level at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least One (1) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications.</p> <p>iv) Must submit the type test report carried over last 10 years by reputed independent accredited testing laboratory.</p> |                                   |
| 4        | 132kV Disconnecting Switch | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied Disconnecting Switch of 132kV or higher Voltage level at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least One (1) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications.</p> <p>iv) Must submit the type test report carried over last 10 years by reputed independent accredited testing laboratory.</p> |                                   |



| Item No. | Description of Item               | Minimum Criteria to be met   | Documents Submission Requirements |
|----------|-----------------------------------|--|-----------------------------------|
| 5        | 120 kV Lightning Arrestor         | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied Lightning Arrestor of 120 kV or higher voltage Class, at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least 1 (One) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications.</p> <p>iv) Must submit the type test report carried out over last 10 years by reputed Independent accredited testing laboratory.</p>    |                                   |
| 6        | Transformer Control & Relay Panel | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied Transformer Control &amp; Relay Panel at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least One (1) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications.</p> <p>iv) Must submit the type test report carried out over last 10 years by reputed independent accredited testing laboratory.</p>                    |                                   |
| 7        | 33kV Vacuum Circuit Breaker       | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied Vacuum Circuit Breaker of 33 kV or higher voltage Class, at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least One (1) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications.</p> <p>iv) Must submit the type test report carried out over last 10 years by reputed independent accredited testing laboratory.</p> |                                   |



| Item No. | Description of Item       | Minimum Criteria to be met   | Documents Submission Requirements |
|----------|---------------------------|--|-----------------------------------|
| 8        | 33kV Current Transformer  | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied Current Transformer of 33 kV or higher voltage Class, at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least One (1) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications.</p> <p>iv) Must submit the type test report carried out over last 10 years by reputed independent accredited testing laboratory.</p>  |                                   |
| 9        | 33kV Disconnecting Switch | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied Disconnecting Switch of 33 kV or higher voltage Class, at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least One (1) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications.</p> <p>iv) Must submit the type test report carried out over last 10 years by reputed independent accredited testing laboratory.</p> |                                   |
| 10       | 30kV Lightning Arrestor   | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied Lightning Arrestor of 30 kV or higher voltage Class, at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least One (1) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications.</p> <p>iv) Must submit the type test report carried out over last 10 years by reputed independent accredited testing laboratory.</p>   |                                   |

*Handwritten signature*





| Item No. | Description of Item                      | Minimum Criteria to be met  | Documents Submission Requirements |
|----------|--|---|-----------------------------------|
| 11       | 33kV Potential Transformer               | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied Potential Transformer of 33 kV or higher voltage Class, at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least One (1) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications.</p> <p>iv) Must submit the type test report carried out over last 10 years by reputed independent accredited testing laboratory.</p>               |                                   |
| 12       | 33kV Single Core XLPE Power Copper Cable | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied Single Core XLPE Power Copper Cable of 33 kV or higher voltage Class, at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least One (1) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications.</p> <p>iv) Must submit the type test report carried out over last 10 years by reputed independent accredited testing laboratory.</p> |                                   |
| 13       | 11kV Vacuum Circuit Breaker              | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied Vacuum Circuit Breaker, 11 kV or higher Voltage Class, at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least One (1) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications.</p> <p>iv) Must submit the type test report carried out by reputed independent accredited testing laboratory.</p>                                   |                                   |





| Item No. | Description of Item     | Minimum Criteria to be met  | Documents Submission Requirements |
|----------|-------------------------|---|-----------------------------------|
| 14       | XLPE Copper Power Cable | <p>i) Must have manufacturing experience of at least 10 (ten) years.</p> <p>ii) Must have designed, manufactured and supplied XLPE Copper Power Cable of 11kV or higher voltage Class, at least twice the bid quantity as a main supplier over last five (5) years period ending on the last date of bid submission. Out of supplied quantity, a minimum of half the bid quantity shall have been in operation satisfactorily to the end users for at least 1 (One) year.</p> <p>iii) Must hold a valid ISO 9001:2000 (including design in scope of registration) certifications.</p> <p>iv) Must submit the type test report carried out over last 10 years period ending on the last date of bid submission by reputed Independent accredited testing laboratory.</p> |                                   |

**Note:**

- i. In the case of a Bidder who offers to supply and install major items of plant under the contract, which the Bidder did not manufacture or otherwise produce, the Bidder shall provide the Manufacturer's authorization, using the form provided in Section 4 (Bidding Forms), showing that the Bidder has been duly authorized by the Manufacturer or producer of the related plant and equipment or component to supply and install that item in the Employer's country. Failure to submit the Manufacturer's authorization at the first instance is considered a minor, nonmaterial omission and shall be subject to clarification. However, failure of the Bidder to submit the omitted authorization shall lead to rejection of the Subcontractor or Manufacturer of the item under evaluation in accordance with ITB 35.4.
- ii. Sales record and user certificates as appropriate and other documentary evidence to support the experience of the manufacturer of the above items shall also be submitted along with the bid to substantiate the experience of the proposed manufacturers. Failure to comply with above requirement will result in rejection of the manufacturer/subcontractor. The manufacturers of above mentioned major items must hold valid ISO 9001 quality certificate.
- iii. The Bidder shall propose the type tested materials. The Successful Bidder shall also submit the type test certificates for each of the above mentioned items. The type test report shall meet the minimum criteria set forth in the Chapter 2- General Technical Requirement, Technical Specification of Section 6- Employers Requirement. In case the type test certificates are not as per the requirement, the Successful bidder shall upon the award of the contract, undertake to carry out the required type tests from a reputed independent laboratory accredited by International Laboratory Accreditation Corporation (ILAC) or International Accreditation Forum (IAF) or other equivalent reputed accreditation agencies (or recognized by NEA) at no extra cost to the Client/Employer including any transportation or costs associated with performing such tests.
- iv. The Bidder shall fill the technical data sheet for all the major items as mentioned above. The failure to submit the technical data sheet for the major items shall cause the rejection of the Bid.
- v. In case of OLTC for the manufacturer other than MR Germany or ABB Sweden.



- a. The bidder must submit the type test report of the OLTC carried over the last 10 years tested by reputed independent testing laboratory accredited by ILAC or IAF.
- b. The OLTC manufacturer must hold a valid ISO 9001:2000 certifications.
- c. The bidder shall also submit the supply record of the OLTC manufacturer. The OLTC manufacturer must have supplied the OLTC at least twice the bid quantity of the Power Transformer outside the country of OLTC manufacturer.



## Section 4 - Bidding Forms

This section contains the forms to be completed by the Bidder and submitted as part of its Bid.

### Table of Forms

|  |    |
|--|----|
| Letter of Technical Bid .....  | 3  |
| Letter of Price Bid.....   | 5  |
| Price Schedules .....  | 7  |
| Bid Security .....   | 8  |
| Technical Proposal.....  | 9  |
| Site Organization.....   | 10 |
| Method Statement .....   | 11 |
| Mobilization Schedule.....   | 12 |
| Construction Schedule .....  | 13 |
| Proposed Subcontractors and/or Manufacturers for Major Items of Plant and Services ..... | 16 |
| Manufacturer's Authorization.....  | 17 |
| Time Schedule .....  | 18 |
| Bidder's Qualification .....   | 20 |
| Form ELI - 1: Bidder's Information Sheet.....  | 20 |
| Form ELI - 2: Joint Venture Information Sheet .....                                      | 21 |
| Form LIT - 1: Pending Litigation .....   | 22 |
| Form FIN - 1: Financial Situation.....   | 23 |
| Form FIN - 2: Average Annual Turnover .....  | 24 |
| Form FIN - 3: Financial Resources.....   | 25 |
| Form FIN- 4: Current Contract Commitments / Works in Progress.....                       | 26 |
| FIN - 5: Self-Assessment Tool for Bidder's Compliance to Financial Resources .....       | 26 |
| Form EXP - 1: General Experience.....  | 28 |
| Form EXP - 2(a): Specific Experience (Contracts of Similar Size and Nature) .....        | 29 |
| Form EXP - 2(b-i): Experience in Key Activities.....                                     | 31 |
| Form EXP - 2(b-ii): Experience in Key Activities.....                                    | 33 |
| Form EXP - 3: Subcontractors / Manufacturers .....                                       | 37 |
| FORM: POWER OF ATTORNEY FOR JOINT VENTURE .....  | 39 |
| FORM: FOR UNDERTAKING BY THE JOINT VENTURE PARTNERS .....                                | 41 |
| FORM: LETTER OF INTENT BY JV PARTNERS TO ENTER INTO JV AGREEMENT .....                   | 45 |



**FORM: JOINT DEED OF UNDERTAKING BY THE HOLDING/PARENT COMPANY ALONGWITH THE  
BIDDER/MANUFACTURER..... 49**



## Letter of Technical Bid

**-- Note --**

The bidder must accomplish the Letter of Technical Bid in its letterhead clearly showing the bidder's complete name and address.

Date: .....

Name of the contract.: .....

Invitation for Bid No.: .....

To: [ . . . insert complete name of the employer . . . ]

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 8.
- (b) We offer to design, manufacture, test, deliver, install, pre-commission, and commission in conformity with the Bidding Document the following Plant and Services: [ . . . insert narrative . . . ]
- (c) Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of [ . . . insert bid validity period as specified in ITB 20.1 of the BDS . . . ] days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
- (d) We, including any Subcontractors or Manufacturers for any part of the Contract, have or will have nationalities from eligible countries, in accordance with ITB 4.2 and meet the requirements of ITB 3.4.
- (e) We, including any Subcontractors or Suppliers for any part of the Contract, do not have any conflict of interest in accordance with ITB 4.3.
- (f) We are not participating, as a Bidder in more than one bid in this bidding process in accordance with ITB 4.3(e), other than alternative offers submitted in accordance with ITB 13.
- (g) We declare that, we including any subcontractors or suppliers for any part of the contract do not have any conflict of interest in the proposed procurement proceedings and we have not been blacklisted as per ITB 3.4 and punished for an offense relating to the concerned profession or business.



- (h) [We are not a government-owned enterprise] / [We are a government-owned enterprise but meet the requirements of ITB 4.5].<sup>1</sup>
- (i) We declare that we are solely responsible for the authenticity of the documents submitted by us. The document and information submitted by us are true and correct. If any document/information given is found to be concealed at a later date, we shall accept any legal actions by the Employer.
- (j) We agree to permit EMPLOYER/DP or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by EMPLOYER/DP.
- (k) If our Bid is accepted, we commit to mobilizing key equipment and personnel in accordance with the requirements set forth in Section 3 (Evaluation and Qualification Criteria) and our technical proposal, or as otherwise agreed with the Employer.
- (l) We are committed to submit the Letter of Commitment for Bank's Undertaking for Line of Credit of ..... Millions at the time of contract agreement, if the bid is awarded to us.

Name .....

In the capacity of .....

Signed .....

Duly authorized to sign the Bid for and on behalf of .....

Date .....

<sup>1</sup> Use one of the two options as appropriate.




## Letter of Price Bid

**-- Note --**

*The bidder must accomplish the Letter of Price Bid in its letterhead clearly showing the bidder's complete name and address.*

Date: .....

Name of the contract: .....

Invitation for Bid No.: .....

To: [. . . insert complete name of the employer . . .]

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Document, including Addenda issued in accordance with Instructions to Bidders (ITB) 8.
- (b) We offer to design, manufacture, test, deliver, install, pre-commission, and commission in conformity with the Bidding Document the following Plant and Services: [. . . insert narrative . . .]
- (c) The total price of our Bid, excluding any discounts offered in item (d) below is the sum of

[amount of foreign currency in words], [amount in figures], and [amount of local currency in words], [amount in figures]

*The total bid price from the Grand Summary (Schedule No. 5) should be entered by the Bidder inside this box. Absence of the total bid price in the Letter of Price Bid may result in the rejection of the bid.*

- (d) The discounts offered and the methodology for their application are as follows: [. . . insert discounts and methodology for their application if any . . .]
- (e) Our Bid shall be valid for a period of [. . . insert bid validity period as specified in ITB 20.1 of the BDS . . .] days from the date fixed for the submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
- (f) If our Bid is accepted, we commit to obtain a performance security in accordance with the Bidding Document.





- (g) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract: <sup>1</sup>

| Name of Recipient | Address | Reason | Amount |
|-------------------|---------|--------|--------|
| .....             | .....   | .....  | .....  |
| .....             | .....   | .....  | .....  |

- (h) We understand that this bid, *together with your written acceptance thereof* included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed.
- (i) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.
- (j) We declare that we are solely responsible for the authenticity of the documents submitted by us.
- (k) We agree to permit EMPLOYER/DP or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by EMPLOYER/DP.

Name .....

In the capacity of .....

Signed .....

Duly authorized to sign the Bid for and on behalf of .....

Date .....

<sup>1</sup> If none has been paid or is to be paid, indicate "None."




# Price Schedules

## (Provided in Volume III)



## Bid Security Bank Guarantee

***Bank's Name, and Address of Issuing Branch or Office  
(On Letter head of the Commercial bank or any Financial Institution eligible to issue Bank  
Guarantee as per prevailing Law)***

Beneficiary: ..... name and address of Employer .....

Date: .....

Bid Security No.: .....

We have been informed that ..... [insert name of the Bidder] (hereinafter called "the Bidder") intends to submit its bid (hereinafter called "the Bid") to you for the execution of ..... name of Contract ..... under Invitation for Bids No. .... ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Bidder, we..... name of Bank. .... hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ..... amount in figures ..... (. .... amount in words ..... ) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

- (a) has withdrawn or modifies its Bid:
  - i) during the period of bid validity specified by the Bidder on the Letter of Technical and Price Bid, in case of electronic submission
  - (ii) from the period twenty-four hours prior to bid submission deadline up to the period of bid validity specified by the Bidder on the Letter of Technical Bid and Price Bid, in case of hard copy submission; or
- (b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or
- (c) changes the prices or substance of the bid while providing information pursuant to clause 29.1 of ITB; or
- (d) having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Agreement, or (ii) fails or refuses to furnish the performance security, in accordance with the ITB.
- (e) is involved in fraud and corruption in accordance with the ITB

This guarantee will remain in force up to and including the date .....number.....days after the deadline for submission of Bids as such deadline is stated in the instructions to Bidders or as it may be extended by the Employer. Any demand in respect of this guarantee should reach the Bank not later than the above date.

This Bank guarantee shall not be withdrawn or released merely upon return of the original guarantee by the Bidder unless notified by you for the release of the guarantee.

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

... Bank's seal and authorized signature(s) ...

### Note:

The bid security of ..... has been counter guaranteed by the Bank ..... on ..... (Applicable for Bid Security of Foreign Banks).



# Technical Proposal

**Site Organization**

**Method Statement**

**Mobilization Schedule**

**Construction Schedule**

**Personnel**

**Equipment**

**Proposed Subcontractors for Major Items of Plant and Services**

**Manufacturer's Authorization**

**Time Schedule**

**Functional Guarantee of the Proposed Facilities**



## Site Organization

The bidder shall show here in an Organogram format the organization of his site personnel showing clearly designated duties and responsibilities and the chain of command throughout the structure. Included in the chart shall be the names of respective personnel.

---



## Method Statement



## Mobilization Schedule

The bidder shall provide here a general description of the arrangements and methods which he proposes to adopt for the detailed site investigation, design and execution of the works which shall include but not be limited to:

- (a) Mobilization period including periods required for establishing the Contractor's offices, workshops etc. and the facilities requires for the Engineer and his staff if applicable.
- (b) Mobilization procedure for the detailed site investigation and design works.

Sources of Contractor's equipment and mobilization periods for items of plant.





## Construction Schedule

The bidder shall provide here his proposed schedule for engineering, procurement and construction of the plants within the Prescribed Time for Completion. The schedule shall be presented in the form of a **bar chart showing main construction activities matching with the Milestones** prescribed by the employer. The proposed schedule shall include the establishment of contractor's site camp and offices, mobilization of manpower and equipment, detailed site survey and soil investigation, detailed design including approval of construction drawings, submission of construction plan and other requires documents, procurement work, execution of major work activities, testing and commissioning, as built drawings and submission of close out report.



## Personnel

### Form PER - 1: Proposed Personnel

Bidders should provide the names of suitably qualified personnel to meet the specified requirements for each of the positions listed in Section III (Evaluation and Qualification Criteria). The data on their experience should be supplied using the Form below for each candidate.

| No. | Name | Position | Academic Qualification | Total Work Experience [Years] | Experience in Similar Works [years] |
|-----|------|----------|------------------------|-------------------------------|-------------------------------------|
| 1.  |      |          |                        |                               |                                     |
| 2.  |      |          |                        |                               |                                     |

### Form PER - 2: Resume of Proposed Personnel

The Bidder shall provide all the information requested below. Fields with asterisk (\*) shall be used for evaluation.

|                             |                                    |  |                      |
|-----------------------------|------------------------------------|--|----------------------|
| <b>Position*</b>            |                                    |  |                      |
| <b>Personal Information</b> | <b>Name</b>                        |  | <b>Date of Birth</b> |
|                             | <b>Professional qualifications</b> |  |                      |
| <b>Present employment</b>   | <b>Name of employer</b>            |  |                      |
|                             | <b>Address of employer</b>         |  |                      |
|                             | <b>Telephone</b>                   | <b>Contact (manager/personnel officer)</b> |                      |
|                             | <b>Fax</b>                         | <b>E-mail</b>                              |                      |
|                             | <b>Job title</b>                   | <b>Years with present employer</b>         |                      |

Summarize professional experience over the last twenty years in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

| From* | To* | Company, Project, Position and Relevant Technical and Management Experience* |
|-------|-----|--|
|       |     |  |
|       |     |  |



## Equipment

### Form EQU: Equipment

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III (Evaluation and Qualification Criteria). A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder. The Bidder shall provide all the information requested below, to the extent possible. Fields with asterisk (\*) shall be used for evaluation.

#### For the equipment under Bidder's ownership

| No. | Equipment Type and Characteristics | Total Nos. of Equipment under Bidder's Ownership | No. of Equipment engaged/proposed for ongoing/committed contracts | Nos. of Equipment proposed for this contract |
|-----|------------------------------------|--|---|--|
| 1.  |                                    |  |   |  |
| 2.  |                                    |  |   |  |

#### For the Equipment to be leased/hired

| No. | Equipment Type and Characteristics | Total Nos. of Equipment under the ownership of lease/hire provider | No. of Equipment engaged/committed for other works | Nos. of Equipment proposed to be leased/hired for this contract |
|-----|------------------------------------|--|--|---|
| 1.  |                                    |  |  |   |
| 2.  |                                    |  |  |   |

|                              |   |                               |
|------------------------------|---|-------------------------------|
| <b>Type of Equipment*</b>    |   |                               |
| <b>Equipment Information</b> | <b>Name of manufacturer</b>   | <b>Model and power rating</b> |
|                              | <b>Capacity*</b>  | <b>Year of manufacture</b>    |
| <b>Current Status</b>        | <b>Current location</b>   |                               |
|                              | <b>Details of current commitments</b>   |                               |
| <b>Source</b>                | <b>Indicate source of the equipment</b><br><input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured |                               |

The following information shall be provided only for equipment not owned by the Bidder.

|                   |   |                               |
|-------------------|---|-------------------------------|
| <b>Owner</b>      | <b>Name of owner</b>  |                               |
|                   | <b>Address of owner</b>   |                               |
|                   | <b>Telephone</b>  | <b>Contact name and title</b> |
|                   | <b>Fax</b>  | <b>email</b>                  |
| <b>Agreements</b> | <b>Details of rental / lease / manufacture agreements specific to the project</b> |                               |



## Proposed Subcontractors and/or Manufacturers for Major Items of Plant and Services

The following Subcontractors and/or Manufacturers are proposed for carrying out the item of the facilities indicated. Bidders are free to propose more than one for each item.

| Major Items of Plant and Services | Proposed Subcontractors or Manufacturers | Nationality |
|-----------------------------------|--|-------------|
|                                   |  |             |



## Manufacturer's Authorization

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

ICB No.: *[insert number of bidding process]*

To: *[insert complete name of the employer]*

### WHEREAS

We *[insert complete name of the manufacturer or manufacturer's authorized agent]*, who are official manufacturers or agent authorized by the Manufacturer of *[insert type of goods manufactured]*, having factories at *[insert full address of manufacturer's factories]*, do hereby authorize *[insert complete name of the bidder]* to submit a bid the purpose of which is to provide the following goods, manufactured by us *[insert name and/or brief description of the goods]*, and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 27 of the General Conditions of Contract, with respect to the goods offered by the above firm.

Signed: *[insert signature(s) of authorized representative(s) of the manufacturer]*

Name: *[insert complete name(s) of authorized representative(s) of the manufacturer]*

Title: *[insert title]*

Duly authorized to sign this Authorization on behalf of *[insert complete name of the manufacturer]*

Dated on \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ *[insert date of signing]*

### -- Note --

*The bidder shall require the manufacturer to fill out this form in accordance with the instructions indicated. This letter of authorization should be signed by a person with the proper authority to sign documents that are binding on the manufacturer. The bidder shall include it in its bid, if so indicated in the BDS.*



## Time Schedule

To be used by Bidder when alternative Time for Completion is invited in ITB 13.2.

---



## Functional Guarantee of the Proposed Facilities

### Form FUNC

The Bidder shall copy in the left column of the table below, the identification of each functional guarantee required in the Specification and stated by the Employer in para. 1.2 (c) of Section III. Evaluation and Qualification Criteria, and in the right column, provide the corresponding value for each functional guarantee of the proposed plant and equipment.

| Required Functional Guarantee                         | Value of Functional Guarantee of the Proposed Plant and Equipment |                            |                                  |
|---|---|----------------------------|----------------------------------|
|   | No Load Loss (KW)   | Load Loss (KW) at 75 Deg C | Auxiliary Loss ( KW) at 75 Deg C |
| (1) 132/33 KV, 80/100 MVA, 3-Ph Power transformer     |   |                            |                                  |
| (2) 132/33 KV, 40/51.5/63 MVA, 3-Ph Power transformer |   |                            |                                  |
| (3) 132/11 KV, 31.5/45 MVA, 3-Ph Power transformer    |   |                            |                                  |
| (4) 33/11 KV, 20/24 MVA, 3-Ph Power transformer       |   |                            |                                  |

### Loss capitalization

The guaranteed transformers losses will be capitalized as follows for evaluation purpose:

| S.N. | Type of Losses   | Capitalization Rate (US\$ per kW) |
|------|------------------|-----------------------------------|
|      |                  | For Transformers                  |
| 1    | No load losses   | 4684                              |
| 2    | Load losses      | 1180                              |
| 3    | Auxiliary Losses | 393                               |

### Guaranteed values not reached.

If the individual losses of a transformer as measured during test exceeds the values Guaranteed in the Bid, then for each kilowatt of losses in excess of the losses guaranteed, an amount at the rates of twice the rates specified above for no-load losses, load-losses and auxiliary Losses shall be deducted from the Contract Price of the successful Bidder.

### Performance Guarantee

The performance figures quoted on Technical Data Sheet shall be guaranteed within the tolerances permitted by relevant standards listed under Part-II, Employer's Requirement, and shall become a part of the successful Bidder's Contract. In case of loss capitalization, no tolerance shall be permitted for the guaranteed value. The transformer will be rejected, if the measured no-load, load and auxiliary losses exceed the guaranteed value by over 15% provided that the total losses do not exceed 10% as specified.





## Bidder's Qualification

To establish its qualifications to perform the contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.

### Form ELI - 1: Bidder's Information Sheet

| Bidder's Information   |  |
|--|--|
| Bidder's legal name  |  |
| In case of a Joint Venture, legal name of each partner   |  |
| Bidder's country of constitution   |  |
| Bidder's year of constitution  |  |
| Bidder's legal address in country of constitution  |  |
| <b>Bidder's authorized representative</b><br>(name, address, telephone number(s), fax number(s), e-mail address)   |  |
|  |  |
| <b>Attached are copies of the following documents:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> 1. In case of a single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2</li> <li><input type="checkbox"/> 2. Authorization to represent the firm or Joint Venture named above, in accordance with ITB 22.2</li> <li><input type="checkbox"/> 3. In case of a Joint Venture, a letter of intent to form a Joint Venture or Joint Venture agreement, in accordance with ITB 4.1</li> <li><input type="checkbox"/> 4. In case of a government-owned enterprise, any additional documents not covered under 1 above required to comply with ITB 4.5</li> </ul> |  |

**Signature of Bidder**




## Form ELI - 2: Joint Venture Information Sheet

Each member of the Joint Venture must fill out this form separately. Subcontractor must fill out this form.

| Joint Venture/Subcontractor Information  |  |
|--|--|
| Bidder's legal name  |  |
| Joint Venture Partner's or Subcontractor's legal name  |  |
| Joint Venture Partner's or Subcontractor's country of constitution   |  |
| Joint Venture Partner's or Subcontractor's year of constitution  |  |
| Joint Venture Partner's or Subcontractor's legal address in country of constitution  |  |
| Joint Venture Partner's or Subcontractor's authorized representative information<br>(name, address, telephone number(s), fax number(s), e-mail address)  |  |
| <p><b>Attached are copies of the following documents:</b></p> <p><input type="checkbox"/> 1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2</p> <p><input type="checkbox"/> 2. Authorization to represent the firm named above, in accordance with ITB 22.2</p> <p><input type="checkbox"/> 3. In the case of a government-owned enterprise, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.5</p> |  |

Subcontractors are those listed in Technical Proposal – Proposed Subcontractors and/or Manufacturers for Major Items of Plant and Services.

**Signature of Bidder**




**Form LIT - 1: Pending Litigation**

Each Bidder or member of a JV must fill in this form

| Pending Litigation  |                   |   |   |
|---|-------------------|---|---|
| <input type="checkbox"/> No pending litigation in accordance with Criteria 2.2 of Section 3 (Evaluation and Qualification Criteria) |                   |   |   |
| <input type="checkbox"/> Pending litigation in accordance with Criteria 2.2 of Section 3 (Evaluation and Qualification Criteria)    |                   |   |   |
| Year  | Matter in Dispute | Value of Pending Claim in US\$ Equivalent | Value of Pending Claim as a Percentage of Net Worth |
|   |                   |   |   |
|   |                   |   |   |
|   |                   |   |   |
|   |                   |   |   |

Signature of Bidder




### Form FIN - 1: Financial Situation

Each Applicant or member of a JV must fill in this form

| Financial Data for Previous 3 Years [in NRs or Equivalent US\$] |                 |               |                 |               |                 |               |
|---|-----------------|---------------|-----------------|---------------|-----------------|---------------|
|   | Year 1          |               | Year 2          |               | Year 3          |               |
|   | Amount Currency | Exchange rate | Amount Currency | Exchange rate | Amount Currency | Exchange rate |

### Information from Balance Sheet

|                     |  |  |  |  |  |  |
|---------------------|--|--|--|--|--|--|
| Total Assets        |  |  |  |  |  |  |
| Total Liabilities   |  |  |  |  |  |  |
| Net Worth           |  |  |  |  |  |  |
| Current Assets      |  |  |  |  |  |  |
| Current Liabilities |  |  |  |  |  |  |

### Information from Income Statement

|                      |  |  |  |  |  |  |
|----------------------|--|--|--|--|--|--|
| Total Revenues       |  |  |  |  |  |  |
| Profits Before Taxes |  |  |  |  |  |  |
| Profits After Taxes  |  |  |  |  |  |  |

- ☐ Attached are copies of financial statements (balance sheets including all related notes, and income statements) for the last two to five years, as indicated above, complying with the following conditions.
- All such documents reflect the financial situation of the Applicant or partner to a JV, and not sister or parent companies.
  - Historic financial statements must be audited by a certified accountant.
  - Historic financial statements must be complete, including all notes to the financial statements.
  - Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

**Note: Attested Financial reports, including balance sheets, profit and loss statements and auditors reports for the last 3 years should be attached.**

*In case of e-submission the attachments should not be uploaded but shall be submitted on notification by the Employer as per ITB 27.*

**Signature of Bidder**




**Form FIN - 2: Average Annual Construction Turnover**

Each Bidder or member of a JV must fill in this form

The information supplied should be the Annual construction Turnover of the Bidder or each member of a JV in terms of the amounts billed to clients for each year for work in progress or completed in NRs or in US Dollars in case of foreign bidders at the rate of exchange **at the end of the period reported.**

| Annual Turnover Data for the Last 10 Years (Construction only)                        |                    |                  |   |
|---|--------------------|------------------|---|
| Year  | Amount<br>Currency | Exchange<br>Rate | Present Value of Annual Turnover<br>(US\$ Equivalent) |
|   |                    |                  |   |
|   |                    |                  |   |
|   |                    |                  |   |
| Average Annual Construction Turnover of best three years out of last ten fiscal years |                    |                  |   |

Signature of Bidder




### Form FIN - 3: Bid Capacity

Each Bidder or member of a JV must fill in this form

$$\text{Bid Capacity} = [(7 \times A) - B]$$

A = Average Annual Turnover of best three years out of last ten fiscal years.

B = Annual Value of the existing commitments and works (ongoing) to be completed, calculated from **FIN-4**.

| SN | Name of Bidder | Pan No. | A, in Million | B, in Million | Bid Capacity,<br>in Million |
|----|----------------|---------|---------------|---------------|-----------------------------|
| 1  |                |         |               |               |                             |
| 2  |                |         |               |               |                             |
| 3  |                |         |               |               |                             |

**Total Bid Capacity:**

Signature of Bidder.



**Form FIN-4: Current Contract Commitments / Works in Progress**

Bidders and each partner to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

| Current Contract Commitments (For Calculation of B with reference of FIN-3) |                  |                          |                                      |                         |                                 |                            |   |   |   |
|---|------------------|--------------------------|--------------------------------------|-------------------------|---------------------------------|----------------------------|---|---|---|
| No.   | Name of Contract | Name of the Contractor/s | Employer's Contact Address, Tel, Fax | Contract Share in % (a) | Contract Amount in Millions (b) | Contract Date(yyyy-mm) (c) | Initial or Revised Contract Duration (months) (d) | Value of outstanding works [In Millions,NRS] <sup>#</sup> (e) | Estimated Time in Month to Complete the outstanding works (f) = (c) + (d) – Date of Invitation of Bid (f) |
| 1   |                  |                          |                                      |                         |                                 |                            |   |   |   |
| 2   |                  |                          |                                      |                         |                                 |                            |   |   |   |
| 3   |                  |                          |                                      |                         |                                 |                            |   |   |   |
| 4   |                  |                          |                                      |                         |                                 |                            |   |   |   |

Signature of Bidder

<sup>#</sup> The Outstanding Works means Contract Price (excluding Vat) minus Work Evaluated by Employer till the reference date. Bidder shall have to submit the relevant documentary evidence to substantiate the facts/figures. Note 1: “B” shall be

calculated as :  $B = \sum \left[ \frac{(e) \times (a)}{(f)} \right] \times 12$  , If (f) is less than 12, then value of (f) shall be taken as 12.

Note 2: If Initial or Revised Contract Date is run out with respect to Date of Invitation of Bid, the Estimated Time in Month to Complete the outstanding works shall be taken equal to 12 months.






782



**Form EXP – 1: General Construction Experience**

Fill out one (1) form per contract.

| General Experience  |   |                 |
|---|---|-----------------|
| Contract No ..... of .....  | Contract Identification   |                 |
| Award Date  |   | Completion Date |
| Role in Contract  | <input type="checkbox"/> Contractor <input type="checkbox"/> Management Contractor <input type="checkbox"/> Subcontractor |                 |
| Total Contract Amount   | \$  |                 |
| If partner in a Joint Venture or subcontractor, specify participation of total contract amount                        | Percent of Total  | Amount          |
| Employer's name<br>Address<br>Telephone number<br>Fax number<br>E-mail  |   |                 |
| Description of the Similarity in Accordance with Criterion 2.4.1 of Section 3 (Evaluation and Qualification Criteria) |   |                 |
|   |   |                 |



**Form EXP – 2(a): Specific Experience (Contracts of Similar Size and Nature)**

Fill out one (1) form per contract.

*[Handwritten signature]*



| Contract of Similar Size and Nature   |   |                 |
|---|---|-----------------|
| Contract No . . . . . of . . . . .  | Contract Identification   |                 |
| Award Date  |   | Completion Date |
| Role in Contract  | <input type="checkbox"/> Contractor <input type="checkbox"/> Management Contractor <input type="checkbox"/> Subcontractor |                 |
| Total Contract Amount   |   |                 |
| If partner in a Joint Venture or subcontractor, specify participation of total contract amount                        | Percent of Total  | Amount          |
|   |   |                 |
| Employer's name<br>Address<br>Telephone number<br>Fax number<br>E-mail  |   |                 |
| Description of the Similarity in Accordance with Criterion 2.4.2 of Section 3 (Evaluation and Qualification Criteria) |   |                 |
|   |   |                 |



**Form EXP – 2(b-i): Experience in Key Activities**

Fill out one (1) form per contract.





| Contract with Similar Key Activities  |   |                 |
|---|---|-----------------|
| Contract No . . . . . of . . . . .  | Contract Identification   |                 |
| Award Date  |   | Completion Date |
| Role in Contract  | <input type="checkbox"/> Contractor <input type="checkbox"/> Management Contractor <input type="checkbox"/> Subcontractor |                 |
| Total Contract Amount   |   |                 |
| If partner in a Joint Venture or subcontractor, specify participation of total contract amount                            | Percent of Total  | Amount          |
|   |   |                 |
| Employer's name<br>Address<br>Telephone number<br>Fax number<br>E-mail  |   |                 |
| Description of the Key Activities in Accordance with Criterion 2.4.2 of Section 3 (Evaluation and Qualification Criteria) |   |                 |
|   |   |                 |



**Form EXP – 2(b-ii): Experience in Key Activities**

Fill out one (1) form per contract.

*[Handwritten signature]*





| Contract with Similar Key Activities  |   |                 |
|---|---|-----------------|
| Contract No . . . . . of . . . . .  | Contract Identification   |                 |
| Award Date  |   | Completion Date |
| Role in Contract  | <input type="checkbox"/> Contractor <input type="checkbox"/> Management Contractor <input type="checkbox"/> Subcontractor |                 |
| Total Contract Amount   |   |                 |
| If partner in a Joint Venture or subcontractor, specify participation of total contract amount                            | Percent of Total  | Amount          |
|   |   |                 |
| Employer's name<br>Address<br>Telephone number<br>Fax number<br>E-mail  |   |                 |
| Description of the Key Activities in Accordance with Criterion 2.4.2 of Section 3 (Evaluation and Qualification Criteria) |   |                 |
|   |   |                 |



**Form EXP – 2(b-iii): Experience in Key Activities**

Fill out one (1) form per contract.

*Handwritten signature*



| Contract with Similar Key Activities  |   |                 |
|---|---|-----------------|
| Contract No . . . . . of . . . . .  | Contract Identification   |                 |
| Award Date  |   | Completion Date |
| Role in Contract  | <input type="checkbox"/> Contractor <input type="checkbox"/> Management Contractor <input type="checkbox"/> Subcontractor |                 |
| Total Contract Amount   |   |                 |
| If partner in a Joint Venture or subcontractor, specify participation of total contract amount                            | Percent of Total  | Amount          |
|   |   |                 |
| Employer's name<br>Address<br>Telephone number<br>Fax number<br>E-mail  |   |                 |
| Description of the Key Activities in Accordance with Criterion 2.4.2 of Section 3 (Evaluation and Qualification Criteria) |   |                 |
|   |   |                 |



**Form EXP - 3: Subcontractors / Manufacturers**

Fill out one (1) form per contract.

*Handwritten signature*



| Contract for the Major Items   |   |                 |
|--|---|-----------------|
| Contract No . . . . . of . . . . .   | Contract Identification   |                 |
| Award Date   |   | Completion Date |
| Role in Contract   | <input type="checkbox"/> Contractor <input type="checkbox"/> Management Contractor <input type="checkbox"/> Subcontractor |                 |
| Total Contract Amount  |   |                 |
| If partner in a Joint Venture or subcontractor, specify participation of total contract amount                       | Percent of Total  | Amount          |
|  |   |                 |
| Employer's name<br>Address<br>Telephone number<br>Fax number<br>E-mail   |   |                 |
| Description of the Major Items in Accordance with Criterion 2.5 of Section 3 (Evaluation and Qualification Criteria) |   |                 |
|  |   |                 |



### FORM: POWER OF ATTORNEY FOR JOINT VENTURE

KNOW ALL MEN BY THESE PRESENTS THAT WE , the Partners whose details are given hereunder ..... have formed a Joint Venture under the laws of .....(\*)/intend to form a Joint Venture(\*) [(\*) delete whichever is not applicable] and having our Registered Office(s)/Head Office(s) at ..... (hereinafter called the 'Joint Venture' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) acting through M/s ..... being the Partner in-charge do hereby constitute, nominate and appoint M/s..... a Company incorporated under the laws of ..... and having its Registered/Head Office at ..... as our duly constituted lawful Attorney (hereinafter called "Attorney" or "Authorized Representative" or "Partner In-charge") to exercise all or any of the powers for and on behalf of the Joint Venture in regard to IFB No..... the bids for which have been invited by Nepal Electricity Authority, **Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations** (hereinafter called the 'Employer') to undertake the following acts:

- i) To sign and submit proposal and participate in the aforesaid Bid Specification of the Employer on behalf of the "Joint Venture".
- ii) To negotiate with the Employer the terms and conditions for award of the Contract pursuant to the aforesaid Bid and to sign the Contract with the Employer for and on behalf of the "Joint Venture".
- iii) To do any other act or submit any document related to the above.
- iv) To receive, accept and execute the Contract for and on behalf of the "Joint Venture".

For the above purpose, the person(s) authorized by the Partner In-charge shall be the person(s) authorized to act on behalf of the "Joint Venture" as per the Power of Attorney given to him/her/them by the Partner In-Charge,

It is clearly understood that all the partners of the joint venture shall be liable jointly and severally for the execution of the Contract in accordance with the Contract terms and the Partner In-charge (Lead Partner) shall ensure performance of the Contract(s) and if one or more Partner fail to perform their respective portions of the Contract(s), the same shall be deemed to be a default by all the Partners.

It is expressly understood that this Power of Attorney shall remain valid binding and irrevocable till completion of the Defect Liability Period in terms of the Contract.

The Joint Venture hereby agrees and undertakes to ratify and confirm all the whatsoever the said Attorney/Authorized Representatives/Partner in-charge quotes in the bid, negotiates and signs the Contract



with the Employer and/or proposes to act on behalf of the Joint Venture by virtue of this Power of Attorney and the same shall bind the Joint Venture as if done by itself.

IN WITNESS THEREOF the Partners Constituting the Joint Venture as aforesaid have executed these presents on this..... day of ..... under the Common Seal(s) of their Companies.

For and on behalf of the

Partners of Joint Venture

.....  
.....

The Common Seal of the above Partners of the Joint Venture:

The Common Seal has been affixed there unto in the presence of:

WITNESS

1. Signature.....

Name .....

Designation .....

Occupation .....

2. Signature.....

Name .....

Designation .....

Occupation .....

**Note: Bidder may use their own proforma for furnishing the Power of Attorney in support of person signing the in case of sole bidder.**





## FORM: FOR UNDERTAKING BY THE JOINT VENTURE PARTNERS

THIS JOINT DEED OF UNDERTAKING executed on this \_\_\_\_\_ day of \_\_\_\_\_ Two Thousand and \_\_\_\_\_ by \_\_\_\_\_ a company incorporated under the laws of \_\_\_\_\_ and having its Registered Office at \_\_\_\_\_ (hereinafter called the "Party No.1" which expression shall include its successors, executors and permitted assigns) and M/s \_\_\_\_\_ a company incorporated under the laws of \_\_\_\_\_ and having its Registered Office at \_\_\_\_\_ (Hereinafter called the "Party No.2" which expression shall include its successors, executors and permitted assigns ) and M/s..... a Company incorporated under the laws of \_\_\_\_\_ and having its Registered Office at \_\_\_\_\_ (hereinafter called the "Party No.3" which expression shall include its successors, executors and permitted assigns) for the purpose of making a bid and entering into a contract [hereinafter called the "Contract"\_{in case of award}] against the IFB No \_\_\_\_\_ for \_\_\_\_\_ (.) \_\_\_\_\_ associated with Nepal Electricity Authority, [Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations](#) (hereinafter called the "Employer").

WHEREAS the Party No.1, Party No.2 and Party No.3 have entered into an Agreement dated \_\_\_\_\_

AND WHEREAS the Employer invited bids as per the above mentioned Specification for the design, manufacture, supply, erection, testing and commissioning of Equipment/ Materials stipulated in the bidding documents under ..... (insert name of the IFB along with project/employer name) .....

AND WHEREAS Clause 4.1, Section-ITB and 'Qualification Requirement of the Bidder', Section-Evaluation and Qualification Criteria forming part of the bidding documents, inter-alia, stipulates that an Undertaking of two or more qualified partners, meeting the requirements of 'Qualification Requirement of the Bidder', Section-Evaluation and Qualification Criteria, as applicable may bid, provided, the Joint Venture fulfills all other requirements under Clause 4.1 (a) and (b) of ITB and 'Qualification Requirement of the Bidder', Section-Evaluation and Qualification Criteria and in such a case, the Letter of Bid (Bid Form) shall be signed by the Partner –In Charge so as to legally bind all the Partners of the Joint Venture, who will be jointly and severally liable to perform the Contract and all obligations hereunder.

The above clause further states that this Undertaking shall be attached to the bid and the Contract performance guarantee will be as per the format enclosed with the bidding document without any restrictions or liability for either party.

AND WHEREAS the bid is being submitted to the Employer vide proposal No.....dated..... by Party No.1 based on this Undertaking between all the parties; under these presents and the bid in accordance with the requirements of Clause 4.1, Section-ITB and 'Qualification Requirement of the Bidder', Section-Evaluation and Qualification Criteria, has been signed by all the parties.





---

**NOW THIS UNDERTAKING WITNESSETH AS UNDER:**

In consideration of the above premises and agreements all the parties of this Deed of Undertaking do hereby declare and undertake:

1. In requirement of the award of the Contract by the Employer to the Joint Venture Partners, we, the Parties do hereby undertake that M/s..... the Party No.1, shall act as Lead Partner and further declare and confirm that we the parties to the Joint Venture shall jointly and severally be bound unto the Employer for the successful performance of the Contract and shall be fully responsible for the design, manufacture, Supply, and successful performance of the equipment in accordance with the Contract:
2. In case of any breach or default of the said Contract by any of the parties to the Joint Venture, the party (s) does hereby undertake to be fully responsible for the successful performance of the Contract and to carry out all the obligations and responsibilities under the Contract in accordance with the requirements of the Contract.
3. Further, if the Employer suffers any loss or damage on account of any breach in the Contract or any shortfall in the performance of the equipment in meeting the performances guaranteed as per the specification in terms of the Contract, the Party(s) of these presents undertake to promptly make good such loss or damages caused to the Employer, on its demand without any demur. It shall not be necessary or obligatory for the Employer to proceed against Lead Partner to these presents before proceeding against or dealing with the other Party(s), the Employer can proceed against any of the parties who shall be jointly and severally liable for the performance and all other liabilities/obligations under the Contract to the Employer.
4. The financial liability of the Parties of this Deed of Undertaking to the Employer, with respect to any of the claims rising out of the performance or non-performance of the obligations set forth in this Deed of Undertaking, read in conjunction with the relevant conditions of the Contract shall, however not be limited in any way so as to restrict or limit the liabilities or obligations of any of the Parties of this Deed of Undertaking.
5. It is expressly understood and agreed between the Parties to this Undertaking that the responsibilities and obligations of each of the Parties shall be as delineated in **Appendix – I (to be suitably appended by the Parties along with this undertaking in its bid)**. It is further undertaken by the parties that the above sharing of responsibilities and obligations shall not in any way be a limitation of joint and several responsibilities of the Parties under the Contract.
6. It is also understood that this Undertaking is provided for the purposes of undertaking joint and several liabilities of the partners to the Joint Venture for submission of the bid and performance of the Contract if awarded and that this Undertaking shall not be deemed to give rise to any additional liabilities or obligations, in any manner or any law, on any of the Parties to this Undertaking or on the Joint Venture, other than the express provisions of the Contract.

---



7. This Undertaking shall be construed and interpreted in accordance with the provisions of the Contract.
8. In case of an award of a Contract, we the parties to this Deed of Undertaking do hereby agree that we shall be jointly and severally responsible for furnishing a Contract performance security from a bank in favour of the Employer in the currency/currencies of the Contract.
9. It is further agreed that this Deed of Undertaking shall be irrevocable and shall form an integral part of the bid and shall continue to be enforceable till the Employer discharges the same or upon the completion of the Contract in accordance with its provisions, whichever is earlier. It shall be effective from the date first mentioned above for all purposes and intents.

IN WITNESS WHEREOF, the Parties to this Deed of Undertaking have through their authorized representatives executed these presents and affixed Common Seals of their companies, on the day, month and year first mentioned above.

Common Seal of \_\_\_\_\_ (For party No 1)  
Has been affixed in\our presence pursuant to Board of Director's Resolution  
Dated \_\_\_\_\_  
Name \_\_\_\_\_  
Designation \_\_\_\_\_ for and on behalf of M/s \_\_\_\_\_  
Signature \_\_\_\_\_ (Signature of the authorized representative)

WITNESS:

I. ....  
II. ....

Common Seal of \_\_\_\_\_ (For party No 2)  
Has been affixed in\our presence pursuant to Board of Director's Resolution  
Dated \_\_\_\_\_  
Name \_\_\_\_\_  
Designation \_\_\_\_\_ for and on behalf of M/s \_\_\_\_\_  
Signature \_\_\_\_\_ (Signature of the authorized representative)

WITNESS:

I. ....  
II. ....

Common Seal of \_\_\_\_\_ (For party No 3)  
Has been affixed in\our presence pursuant to Board of Director's Resolution  
Dated \_\_\_\_\_  
Name \_\_\_\_\_



Designation \_\_\_\_\_

Signature \_\_\_\_\_

for and on behalf of M/s \_\_\_\_\_

(Signature of the authorized representative)

WITNESS:

I. ....

II. ....



**FORM: LETTER OF INTENT BY JV PARTNERS TO ENTER INTO JV AGREEMENT**

THIS LETTER OF INTENT signed on this \_\_\_\_\_ day of \_\_\_\_\_ Two Thousand and \_\_\_\_\_ by \_\_\_\_\_ a company incorporated under the laws of \_\_\_\_\_ and having its Registered Office at \_\_\_\_\_ (hereinafter called the "Party No.1" which expression shall include its successors, executors and permitted assigns) and M/s \_\_\_\_\_ a company incorporated under the laws of \_\_\_\_\_ and having its Registered Office at \_\_\_\_\_ (hereinafter called the "Party No.2" which expression shall include its successors, executors and permitted assigns) and M/s \_\_\_\_\_ a Company incorporated under the laws of \_\_\_\_\_ and having its Registered Office at \_\_\_\_\_ (hereinafter called the "Party No.3" which expression shall include its successors, executors and permitted assigns) for the purpose of making a bid and entering into a contract [hereinafter called the "Contract" {in case of award}] against the IFB No \_\_\_\_\_ for \_\_\_\_\_ (.) \_\_\_\_\_ associated with \_\_\_\_\_ of Nepal Electricity Authority, [Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations](#) (hereinafter called the "Employer").

WHEREAS the Party No.1, Party No.2 and Party No.3 intend to enter into a Joint Venture Agreement AND WHEREAS the Employer invited bids as per the above mentioned Specification for the design, manufacture, Supply of Equipment Materials stipulated in the bidding documents under \_\_\_\_\_ (.) \_\_\_\_\_ associated with \_\_\_\_\_.

AND WHEREAS Clause 4.1, Section-ITB and 'Qualification Requirement of the Bidder', Section-Evaluation and Qualification Criteria forming part of the bidding documents, inter-alia, stipulates that two or more qualified partners, meeting the requirements of 'Qualification Requirement of the Bidder', Section-Evaluation and Qualification Criteria, as applicable may bid, provided, they submit a Letter of Intent to enter into Joint Venture Agreement and the Joint Venture Partners fulfil all other requirements under Clause 4.1 (a) and (b) of ITB and 'Qualification Requirement of the Bidder', Section-Evaluation and Qualification Criteria and in such a case, the Letter of Bid (Bid Form) shall be signed by all the proposed partners so as to legally bind all the Partners of the Joint Venture, who will be jointly and severally liable to perform the Contract by entering into Joint Venture Agreement as per proforma specified in this Section IV. Bidding Forms of the Bidding Documents which will be legally binding on all partners and all obligations hereunder.

The above clause further states that this Letter of Intent shall be attached to the bid and the Contract performance guarantee will be as per the format enclosed with the bidding document without any restrictions or liability for either party.

AND WHEREAS the bid is being submitted to the Employer vide proposal No \_\_\_\_\_ dated \_\_\_\_\_ by Party No.1 based on this Letter of Intent between all the parties; under these presents and the bid in accordance with



the requirements of Clause 4.1, Section-ITB and 'Qualification Requirement of the Bidder', Section-Evaluation and Qualification Criteria, has been signed by all the parties.

NOW THIS UNDERTAKING WITNESSETH AS UNDER:

In consideration of the above premises and agreements all the parties of this Letter of Intent do hereby declare and undertake:

1. In requirement of the award of the Contract by the Employer to the Joint Venture Partners, we, the Parties do hereby undertake that M/s..... the Party No.1, shall act as Lead Partner and further declare and confirm that we the parties to the Joint Venture shall jointly and severally be bound unto the Employer for the successful performance of the Contract and shall be fully responsible for the design, manufacture, Supply, and successful performance of the equipment in accordance with the Contract for which we shall enter into Joint Venture Agreement as per performa specified in this Section IV. Bidding Forms of the Bidding Documents which will be legally binding on all partners:
2. If the Contract is awarded to Joint Venture then in case of any breach or default of the said Contract by any of the parties to the Joint Venture, the party(s) will be fully responsible for the successful performance of the Contract and to carry out all the obligations and responsibilities under the Contract in accordance with the requirements of the Contract.
3. Further, if the Employer suffers any loss or damage on account of any breach in the Contract or any shortfall in the performance of the equipment in meeting the performances guaranteed as per the specification in terms of the Contract, the Party(s) of these presents will promptly make good such loss or damages caused to the Employer, on its demand without any demur. It shall not be necessary or obligatory for the Employer to proceed against Lead Partner to these presents before proceeding against or dealing with the other Party(s), the Employer can proceed against any of the parties who shall be jointly and severally liable for the performance and all other liabilities/obligations under the Contract to the Employer.
4. The financial liability of the Parties of the Deed of Undertaking to the Employer in the event of award of Contract on the Joint Venture, with respect to any of the claims rising out of the performance or non-performance of the obligations set forth in the Deed of Undertaking, read in conjunction with the relevant conditions of the Contract shall, however not be limited in any way so as to restrict or limit the liabilities or obligations of any of the Parties of the Deed of Undertaking.
5. It is expressly understood and agreed between the Parties to this Letter of Intent that the responsibilities and obligations of each of the Parties shall be as delineated in **Appendix – I (to be suitably appended by the Parties along with this Letter of Intent in its bid)**. It is further undertaken by the parties that the above sharing of responsibilities and obligations shall not in any way be a limitation of joint and several responsibilities of the Parties under the Contract in the event of award on Joint Venture.



6. It is also understood that this Letter of Intent is provided for the purposes of undertaking joint and several liabilities of the partners to the Joint Venture for submission of the bid and performance of the Contract if awarded and that this Letter of Intent shall not be deemed to give rise to any additional liabilities or obligations, in any manner or any law, on any of the Parties to this Letter of Intent or on the Joint Venture, other than the express provisions of the Contract.
7. This Letter of Intent shall be construed and interpreted in accordance with the provisions of the Contract.
8. In case of an award of a Contract, we the parties to this Letter of Intent do hereby agree that we shall enter into Joint Venture Agreement as per proforma specified in this Section IV. Bidding Forms of the Bidding Documents which will be legally binding on all partners and we shall be jointly and severally responsible for furnishing a Contract performance security from a bank in favour of the Employer in the currency/currencies of the Contract.
9. It is further agreed that this Letter of Intent shall be irrevocable and shall form an integral part of the bid. It shall be effective from the date first mentioned above for all purposes and intents.

IN WITNESS WHEREOF, the Parties to this Letter of Intent have through their authorized representatives executed these presents and affixed Common Seals of their companies, on the day, month and year first mentioned above.

Common Seal of \_\_\_\_\_ (For party No 1)  
Has been affixed in our presence pursuant to Board of Director's Resolution  
Dated \_\_\_\_\_  
Name \_\_\_\_\_  
Designation \_\_\_\_\_ for and on behalf of M/s \_\_\_\_\_  
Signature \_\_\_\_\_ (Signature of the authorized representative)

WITNESS:

I. ....  
II. ....  
Common Seal of \_\_\_\_\_ (For party No 2)  
Has been affixed in our presence pursuant to Board of Director's Resolution  
Dated \_\_\_\_\_  
Name \_\_\_\_\_  
Designation \_\_\_\_\_ for and on behalf of M/s \_\_\_\_\_  
Signature \_\_\_\_\_ (Signature of the authorized representative)

WITNESS:

I. ....  
II. ....  
Common Seal of \_\_\_\_\_ (For party No 3)



Has been affixed in your presence pursuant to Board of Director's Resolution

Dated \_\_\_\_\_

Name \_\_\_\_\_

Designation \_\_\_\_\_

Signature \_\_\_\_\_

for and on behalf of M/s \_\_\_\_\_  
(Signature of the authorized representative)

WITNESS:

I. ....

II. ....



## APPENDIX-I to the FORM OF JV AGREEMENT

| SN | Description                | Lead Partner in JV   | Other partner in JV  |
|----|----------------------------|--|--|
| 1  | Share Percentage in JV     |  |  |
| 2  | Roles and Responsibilities | <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> | <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> |

*[Handwritten Signature]*





## Section 5 - Eligible Countries

All Countries are eligible unless otherwise restriction by the Government of Nepal (GoN)



## Section 6 - Employer's Requirements

### Table of Contents

|             |   |             |
|-------------|---|-------------|
| <b>1</b>    | <b>Scope of Supply of Plant and Services.....</b>   | <b>6-2</b>  |
| <b>2.</b>   | <b>Specifications .....</b>                         | <b>6-3</b>  |
| <b>3.</b>   | <b>Drawings .....</b>                               | <b>6-4</b>  |
| <b>4.</b>   | <b>Supplementary Information .....</b>              | <b>6-5</b>  |
| <b>5.</b>   | <b>Certificates.....</b>                            | <b>6-6</b>  |
|             | 5.1 Form of Completion Certificate .....            | 6-7         |
|             | 5.2 Form of Operational Acceptance Certificate..... | 6-8         |
| <b>6.</b>   | <b>Change Orders .....</b>                          | <b>6-9</b>  |
| <b>6.1.</b> | <b>Change Order Procedure .....</b>                 | <b>6-10</b> |
|             | 6.1.1 General.....                                  | 6-10        |
|             | 6.1.2 Change Order Log.....                         | 6-10        |
|             | 6.1.3 References for Changes .....                  | 6-10        |
| <b>6.2</b>  | <b>Change Order Forms .....</b>                     | <b>6-11</b> |
|             | 6.2.1 Request for Change Proposal Form .....        | 6-11        |
|             | 6.2.2 Estimate for Change Proposal Form .....       | 6-12        |
|             | 6.2.3 Acceptance of Estimate Form.....              | 6-13        |
|             | 6.2.4 Change Proposal Form.....                     | 6-14        |
|             | 6.2.5 Change Order Form.....                        | 6-16        |
|             | 6.2.6 Pending Agreement Change Order Form .....     | 6-18        |
|             | 6.2.7 Application for Change Proposal Form .....    | 6-19        |



# 1. Scope of Supply of Plant and Services

## (Provided in Volume II)



## 2. Specifications

(Provided in Volume II)



### 3. Drawings

(Provided in Volume II)



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## 4. Supplementary Information

### (Provided in Volume II)

---



## 5. Certificates



## 5.1 Form of Completion Certificate

Contract: [ . . . .insert name of contract and contract identification details. . . . ]

Date: .....

Certificate No.: .....

To: [ . . . .insert name and address of contractor. . . . ]

Dear Ladies and/or Gentlemen,

Pursuant to GCC Clause 24 (Completion of the Facilities) of the General Conditions of the Contract entered into between yourselves and the Employer dated [ . . . .insert date. . . . ], relating to the [ . . . .brief description of the Facilities . . . . ], we hereby notify you that the following part(s) of the Facilities was (were) complete on the date specified below, and that, in accordance with the terms of the Contract, the Employer hereby takes over the said part(s) of the Facilities, together with the responsibility for care and custody and the risk of loss thereof on the date mentioned below.

1. Description of the Facilities or part thereof: [ . . . .description . . . . ]
2. Date of Completion: [ . . . .date . . . . ]

However, you are required to complete the outstanding items listed in the attachment hereto as soon as practicable.

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

[ . . . .Signature . . . . ]

Project Manager





## 5.2 Form of Operational Acceptance Certificate

Contract: [ . . . . insert name of contract and contract identification details. . . . ]

Date: .....

Certificate No.: .....

To: [ . . . . insert name and address of contractor. . . . ]

Pursuant to GCC Subclause 25.3 (Operational Acceptance) of the General Conditions of the Contract entered into between yourselves and the Employer dated [ . . . date . . . ], relating to the [ . . . brief description of the facilities. . . ], we hereby notify you that the Functional Guarantees of the following part(s) of the Facilities were satisfactorily attained on the date specified below.

1. Description of the Facilities or part thereof: [ . . . description . . . ]
2. Date of Operational Acceptance: [ . . . date . . . ]

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

[ . . . . Signature . . . . ]

Project Manager



## 6. Change Orders

### 6.1 Change Order Procedure

- 6.1.1 General
- 6.1.2 Change Order Log
- 6.1.3 References for Changes

### 6.2. Change Order Forms

- 6.2.1 Request for Change Proposal
- 6.2.2 Estimate for Change Proposal
- 6.2.3 Acceptance of Estimate
- 6.2.4 Change Proposal
- 6.2.5 Change Order
- 6.2.6 Pending Agreement Change Order
- 6.2.7 Application for Change Proposal



## 6.1. Change Order Procedure

### 6.1.1 General

This section provides samples of procedures and forms for implementing changes in the Facilities during the performance of the Contract in accordance with GCC Clause 39 (Change in the Facilities) of the General Conditions.

### 6.1.2 Change Order Log

The Contractor shall keep an up-to-date Change Order Log to show the current status of Requests for Change and Changes authorized or pending. Entries of the Changes in the Change Order Log shall be made to ensure that the log is up-to-date. The Contractor shall attach a copy of the current Change Order Log in the monthly progress report to be submitted to the Employer.

### 6.1.3 References for Changes

- (1) Request for Change as referred to in GCC Clause 39 shall be serially numbered CR-X-nnn.
- (2) Estimate for Change Proposal as referred to in GCC Clause 39 shall be serially numbered CN-X-nnn.
- (3) Acceptance of Estimate as referred to in GCC Clause 39 shall be serially numbered CA-X-nnn.
- (4) Change Proposal as referred to in GCC Clause 39 shall be serially numbered CP-X-nnn.
- (5) Change Order as referred to in GCC Clause 39 shall be serially numbered CO-X-nnn.

Note:

- (a) Requests for Change issued from the Employer's Home Office and the Site representatives of the Employer shall have the following respective references:

|             |          |
|-------------|----------|
| Home Office | CR-H-nnn |
| Site        | CR-S-nnn |

- (b) The above number "nnn" is the same for Request for Change, Estimate for Change Proposal, Acceptance of Estimate, Change Proposal and Change Order.



## 6.2 Change Order Forms

### 6.2.1 Request for Change Proposal Form

[ *Employer's letterhead* ]

To: [ *Contractor's name and address* ]

Date:

Attention: [ *Name and title* ]

Contract Name: [ *Contract name* ]

Contract Number: [ *Contract number* ]

Dear Ladies and/or Gentlemen:

With reference to the captioned Contract, you are requested to prepare and submit a Change Proposal for the Change noted below in accordance with the following instructions within [ *number* ] days of the date of this letter [or on or before ( *date* )].

1. Title of Change: [ *Title* ]
2. Change Request No./Rev.: [ *Number* ]
3. Originator of Change:  
*Employer: [Name]*  
*Contractor (by Application for Change Proposal No. [Number Refer to Annex 6.2.7])*
4. Brief Description of Change: [ *Description* ]
5. Facilities and/or Item No. of equipment related to the requested Change: [ *Description* ]
6. Reference drawings and/or technical documents for the request of Change:  

| <i>Drawing No./Document No.</i> | <i>Description</i> |
|---------------------------------|--------------------|
|                                 |                    |
7. Detailed conditions or special requirements on the requested Change: [ *Description* ]
8. General Terms and Conditions:
  - (a) Please submit your estimate showing what effect the requested Change will have on the Contract Price.
  - (b) Your estimate shall include your claim for the additional time, if any, for completing the requested Change.
  - (c) If you have any opinion that is critical to the adoption of the requested Change in connection with the conformability to the other provisions of the Contract or the safety of the Plant or Facilities, please inform us in your proposal of revised provisions.
  - (d) Any increase or decrease in the work of the Contractor relating to the services of its personnel shall be calculated.
  - (e) You shall not proceed with the execution of the work for the requested Change until we have accepted and confirmed the amount and nature in writing.

[ *Employer's name* ]

[ *Signature* ]

[ *Name of signatory* ]

[ *Title of signatory* ]



## 6.2.2 Estimate for Change Proposal Form

[ Contractor's letterhead ]

To: [ Employer's name and address ]

Date:

Attention: [ Name and title ]

Contract Name: [ Contract name ]

Contract Number: [ Contract number ]

Dear Ladies and/or Gentlemen:

With reference to your Request for Change Proposal, we are pleased to notify you of the approximate cost to prepare the below-referenced Change Proposal in accordance with GCC Subclause 39.2.1 of the General Conditions. We acknowledge that your agreement to the cost of preparing the Change Proposal, in accordance with GCC Subclause 39.2.2, is required before estimating the cost for change work.

1. Title of Change: [ Title ]
2. Change Request No./Rev.: [ Number ]
3. Brief Description of Change: [ Description ]
4. Scheduled Impact of Change: [ Description ]
5. Cost for Preparation of Change Proposal: [ insert costs, which shall be in the currencies of the contract ]

|      |  |          |
|------|--|----------|
| (a)  | Engineering  | (Amount) |
| (i)  | Engineer _____ hours (hrs) x _____ rate/hr = _____ |          |
| (ii) | Draftsperson _____ hrs x _____ rate/hr = _____     |          |
|      | Sub-total _____ hrs                                | _____    |
|      | Total Engineering Cost                             | _____    |
| (b)  | Other Cost   | _____    |
|      | Total Cost (a) + (b)                               | _____    |

[ Contractor's name ]

[ Signature ]

[ Name of signatory ]

[ Title of signatory ]



### 6.2.3 Acceptance of Estimate Form

[ Employer's letterhead ]

To: [ Contractor's name and address ]

Date:

Attention: [ Name and title ]

Contract Name: [ Contract name ]

Contract Number: [ Contract number ]

Dear Ladies and/or Gentlemen:

We hereby accept your Estimate for Change Proposal and agree that you should proceed with the preparation of the Change Proposal.

1. Title of Change: [ Title ]
2. Change Request No./Rev.: [ Request number/revision ]
3. Estimate for Change Proposal No./Rev.: [ Proposal number/revision ]
4. Acceptance of Estimate No./Rev.: [ Estimate number/revision ]
5. Brief Description of Change: [ Description ]
6. Other Terms and Conditions: In the event that we decide not to order the Change accepted, you shall be entitled to compensation for the cost of preparing the Change Proposal described in your Estimate for Change Proposal mentioned in para. 3 above in accordance with GCC Clause 39 of the General Conditions.

[ Employer's name ]

[ Signature ]

[ Name of signatory ]

[ Title of signatory ]



## 6.2.4 Change Proposal Form

[ Contractor's letterhead ]

To: [ Employer's name and address ]

Date:

Attention: [ Name and title ]

Contract Name: [ Contract name ]

Contract Number: [ Contract number ]

Dear Ladies and/or Gentlemen:

In response to your Request for Change Proposal No. [Number], we hereby submit our proposal as follows:

1. Title of Change: [ Name ]
2. Change Proposal No./Rev.: [ Proposal number / revision ]
3. Originator of Change: Employer: [ Name ] / Contractor: [ Name ]
4. Brief Description of Change: [ Description ]
5. Reasons for Change: [ Reason ]
6. Facilities and/or Item No. of Equipment related to the requested Change: [ Facilities ]
7. Reference drawings and/or technical documents for the requested Change:  
[ Drawing/Document No./Description ]
8. Estimate of increase/decrease to the Contract Price resulting from the Change Proposal:

Amount

[ insert amounts in the currencies of the

Contract ]

- |  |       |
|--|-------|
| (a) Direct material                      | _____ |
| (b) Major construction equipment         | _____ |
| (c) Direct field labor (Total hrs)       | _____ |
| (d) Subcontracts                         | _____ |
| (e) Indirect material and labor          | _____ |
| (f) Site supervision                     | _____ |
| (g) Head office technical staff salaries | _____ |



Process engineer \_\_\_\_\_ hrs @ \_\_\_\_\_ rate/hr \_\_\_\_\_  
Project engineer \_\_\_\_\_ hrs @ \_\_\_\_\_ rate/hr \_\_\_\_\_  
Equipment engineer \_\_\_\_\_ hrs @ \_\_\_\_\_ rate/hr \_\_\_\_\_  
Procurement \_\_\_\_\_ hrs @ \_\_\_\_\_ rate/hr \_\_\_\_\_  
Draftsperson \_\_\_\_\_ hrs @ \_\_\_\_\_ rate/hr \_\_\_\_\_  
Total \_\_\_\_\_ hrs \_\_\_\_\_

(h) Extraordinary costs (computer, travel, etc.) \_\_\_\_\_  
(i) Fee for general administration, % of Items \_\_\_\_\_  
(j) Taxes and customs duties \_\_\_\_\_  
Total lump sum cost of Change Proposal [ Sum of items (a) to (j) ]  
Cost to prepare Estimate for Change Proposal [ Amount payable if Change is  
not accepted ]

9. Additional time for Completion required due to Change Proposal
10. Effect on the Functional Guarantees
11. Effect on the other terms and conditions of the Contract
12. Validity of this Proposal: within [Number] days after receipt of this Proposal by the Employer
13. Other terms and conditions of this Change Proposal:
  - (a) You are requested to notify us of your acceptance, comments or rejection of this detailed Change Proposal within [Number] days from your receipt of this Proposal.
  - (b) The amount of any increase and/or decrease shall be taken into account in the adjustment of the Contract Price.
  - (c) Contractor's cost for preparation of this Change Proposal: [ . . . .insert amount.  
This cost shall be reimbursed by the employer in case of employer's withdrawal or rejection of this Change Proposal without default of the contractor in accordance with GCC Clause 39 of the General Conditions . . . . ]

[ Contractor's name ]

[ Signature ]

[ Name of signatory ]

[ Title of signatory ]





## 6.2.5 Change Order Form

[ Employer's letterhead ]

To: [ Contractor's name and address ]

Date:

Attention: [ Name and title ]

Contract Name: [ Contract name ]

Contract Number: [ Contract number ]

Dear Ladies and/or Gentlemen:

We approve the Change Order for the work specified in the Change Proposal (No. [ number ]), and agree to adjust the Contract Price, Time for Completion, and/or other conditions of the Contract in accordance with GCC Clause 39 of the General Conditions.

1. Title of Change: [ Name ]
2. Change Request No./Rev.: [ Request number / revision ]
3. Change Order No./Rev.: [ Order number / revision ]
4. Originator of Change: Employer: [Name] / Contractor: [ Name ]
5. Authorized Price:  
Ref. No.: [ Number ] Date: [ Date ]  
Foreign currency portion [ Amount ] plus Local currency portion [ Amount ]
6. Adjustment of Time for Completion  
None            Increase [ Number ] days            Decrease [ Number ] days
7. Other effects, if any

Authorized by: \_\_\_\_\_

Employer

Date: \_\_\_\_\_

Accepted by: \_\_\_\_\_

Date: \_\_\_\_\_



Contractor



## 6.2.6 Pending Agreement Change Order Form

[ Employer's letterhead ]

To: [ Contractor's name and address ]

Date:

Attention: [ Name and title ]

Contract Name: [ Contract name ]

Contract Number: [ Contract number ]

Dear Ladies and/or Gentlemen:

We instruct you to carry out the work in the Change Order detailed below in accordance with GCC Clause 39 of the General Conditions.

1. Title of Change: [ Name ]
2. Employer's Request for Change Proposal No./Rev.: [ number/revision ] dated: [ date ]
3. Contractor's Change Proposal No./Rev.: [ number / revision ] dated: [ date ]
4. Brief Description of Change: [ Description ]
5. Facilities and/or Item No. of equipment related to the requested Change: [ Facilities ]
6. Reference Drawings and/or technical documents for the requested Change:  
[ Drawing / Document No. / Description ]
7. Adjustment of Time for Completion:
8. Other change in the Contract terms:
9. Other terms and conditions:

[ Employer's name ]

[ Signature ]

[ Name of signatory ]

[ Title of signatory ]



## 6.2.7 Application for Change Proposal Form

[ Contractor's letterhead ]

To: [ Employer's name and address ]

Date:

Attention: [ Name and title ]

Contract Name: [ Contract name ]

Contract Number: [ Contract number ]

Dear Ladies and/or Gentlemen:

We hereby propose that the work mentioned below be treated as a Change in the Facilities.

1. Title of Change: [ Name ]
2. Application for Change Proposal No./Rev.: [ Number / revision ] dated: [ Date ]
3. Brief Description of Change: [ Description ]
4. Reasons for Change:
5. Order of Magnitude Estimation (amount in the currencies of the Contract): [ Amount ]
6. Scheduled Impact of Change:
7. Effect on Functional Guarantees, if any:
8. Appendix:

[ Contractor's name ]

[ Signature ]

[ Name of signatory ]

[ Title of signatory ]



## Section 7 - General Conditions of Contract

The GCC in this section, read in conjunction with the Special Conditions of Contract in Section 8 and other documents listed therein, should be a complete document expressing all the rights and obligations of the contracting parties. The General Conditions herein shall not be altered.

### Table of Clauses

|   |             |
|---|-------------|
| <b>A. Contract and Interpretation.....</b>        | <b>7-3</b>  |
| 1. Definitions .....                              | 7-3         |
| 2. Contract Documents.....                        | 7-5         |
| 3. Interpretation .....                           | 7-5         |
| 4. Communications.....                            | 7-7         |
| 5. Law and Language .....                         | 7-7         |
| 6. Fraud and Corruption .....                     | 7-7         |
| <b>B. Subject Matter of Contract .....</b>        | <b>7-8</b>  |
| 7. Scope of Facilities .....                      | 7-8         |
| 8. Time for Commencement and Completion .....     | 7-8         |
| 9. Contractor's Responsibilities .....            | 7-9         |
| 10. Employer's Responsibilities.....              | 7-10        |
| <b>C. Payment .....</b>                           | <b>7-11</b> |
| 11. Contract Price.....                           | 7-11        |
| 12. Terms of Payment .....                        | 7-11        |
| 13. Securities .....                              | 7-12        |
| 14. Taxes and Duties.....                         | 7-12        |
| <b>D. Intellectual Property .....</b>             | <b>7-13</b> |
| 15. License/Use of Technical Information .....    | 7-13        |
| 16. Confidential Information .....                | 7-13        |
| <b>E. Execution of the Facilities.....</b>        | <b>7-14</b> |
| 17. Representatives.....                          | 7-14        |
| 18. Work Program .....                            | 7-16        |
| 19. Subcontracting.....                           | 7-17        |
| 20. Design and Engineering .....                  | 7-18        |
| 21. Procurement .....                             | 7-20        |
| 22. Installation .....                            | 7-21        |
| 23. Test and Inspection .....                     | 7-27        |
| 24. Completion of the Facilities .....            | 7-28        |
| 25. Commissioning and Operational Acceptance..... | 7-30        |
| <b>F. Guarantees and Liabilities.....</b>         | <b>7-32</b> |
| 26. Completion Time Guarantee .....               | 7-32        |
| 27. Defect Liability .....                        | 7-33        |
| 28. Functional Guarantees .....                   | 7-35        |
| 29. Patent Indemnity.....                         | 7-35        |
| 30. Limitation of Liability .....                 | 7-36        |
| <b>G. Risk Distribution.....</b>                  | <b>7-37</b> |
| 31. Transfer of Ownership .....                   | 7-37        |



|   |             |
|---|-------------|
| 32. Care of Facilities .....  | 7-37        |
| 33. Loss of or Damage to Property; Accident or Injury to Workers; Indemnification ..... | 7-38        |
| 34. Insurance .....   | 7-39        |
| 35. Unforeseen Conditions .....   | 7-41        |
| 36. Change in Laws and Regulations .....  | 7-42        |
| 37. Force Majeure .....   | 7-42        |
| 38. War Risks .....   | 7-43        |
| <b>H. Change in Contract Elements .....</b>   | <b>7-45</b> |
| 39. Change in the Facilities .....  | 7-45        |
| 40. Extension of Time for Completion .....  | 7-47        |
| 41. Suspension .....  | 7-48        |
| 42. Termination .....   | 7-49        |
| 43. Assignment .....  | 7-51        |
| <b>I. Claims, Disputes and Arbitration .....</b>  | <b>7-51</b> |
| 44. Contractor's Claims .....   | 7-51        |
| 45. Disputes and Arbitration .....  | 7-52        |

# General Conditions of Contract

## A. Contract and Interpretation

### 1. Definitions

1.1 The following words and expressions shall have the meanings hereby assigned them:

“Contract” means the Contract Agreement entered into between the Employer and the Contractor, together with the Contract Documents referred to therein; they shall constitute the Contract, and the term “the Contract” shall in all such documents be construed accordingly.

“Contract Documents” means the documents listed in Article 1.1 (Contract Documents) of the Contract Agreement (including any amendments thereto).

“GCC” means the General Conditions of Contract.

“SCC” means the Special Conditions of Contract.

“day” means calendar day.

“year” means 365 days.

“month” means calendar month.

“Party” means the Employer or the Contractor, as the context requires.

“Employer” means the person named as such in the SCC and includes the legal successors or permitted assigns of the Employer.

“Project Manager” means the person appointed by the Employer in the manner provided in GCC Subclause 17.1 (Project Manager) hereof and named as such in the SCC to perform the duties delegated by the Employer.

“Contractor” means the person(s) named as Contractor in the Contract Agreement, and includes the legal successors or permitted assigns of the Contractor.

“Contractor’s Representative” means any person nominated by the Contractor and approved by the Employer in the manner provided in GCC Subclause 17.2 (Contractor’s Representative and Construction Manager) hereof to perform the duties delegated by the Contractor.

“Construction Manager” means the person appointed by the Contractor’s Representative in the manner provided in GCC Subclause 17.2.4.

“Subcontractor,” including manufacturers, means any person to whom execution of any part of the Facilities, including preparation of any design or supply of any Plant, is sub-contracted directly or indirectly by the Contractor, and includes its legal successors or permitted assigns.

“Dispute Board” means the person or persons named as such in the SCC appointed by agreement between the Employer and the Contractor to make a decision on or to settle any dispute or difference between the Employer and the Contractor referred to him or her by the parties pursuant to GCC Subclause 45.1 (Dispute Board) hereof.

“The Bank” means the financing institution named in the SCC



“Contract Price” means the sum specified in Article 2.1 (Contract Price) of the Contract Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.

“Facilities” means the Plant to be supplied and installed, as well as all the Installation Services to be carried out by the Contractor under the Contract.

“Plant” means permanent plant, equipment, machinery, apparatus, articles and things of all kinds to be provided and incorporated in the Facilities by the Contractor under the Contract (including the spare parts to be supplied by the Contractor under GCC Subclause 7.3 hereof), but does not include Contractor’s Equipment.

“Installation Services” means all those services ancillary to the supply of the Plant for the Facilities, to be provided by the Contractor under the Contract, such as transportation and provision of marine or other similar insurance, inspection, expediting, site preparation works (including the provision and use of Contractor’s Equipment and the supply of all construction materials required), installation, testing, precommissioning, commissioning, operations, maintenance, the provision of operations and maintenance manuals, training, etc. as the case may require.

“Contractor’s Equipment” means all facilities, equipment, machinery, tools, apparatus, appliances, or things of every kind required in or for installation, completion and maintenance of Facilities that are to be provided by the Contractor, but does not include Plant, or other things intended to form or forming part of the Facilities.

“Country of Origin” means the countries and territories eligible under the rules of the Bank as further elaborated in the SCC.

“Site” means the land and other places upon which the Facilities are to be installed, and such other land or places as may be specified in the Contract as forming part of the Site.

“Effective Date” means the date of fulfillment of all conditions stated in Article 3 (Effective Date) of the Contract Agreement, upon which the period until the Time for Completion shall be counted from.

“Time for Completion” means the time within which Completion of the Facilities as a whole (or of a part of the Facilities where a separate Time for Completion of such part has been prescribed) is to be attained, as referred to in GCC Clause 8 and in accordance with the relevant provisions of the Contract.

“Completion” means that the Facilities (or a specific part thereof where specific parts are specified in the Contract) have been completed operationally and structurally and put in a tight and clean condition, that all work in respect of Precommissioning of the Facilities or such specific part thereof has been completed, and that the Facilities or specific part thereof are ready for Commissioning as provided in GCC Clause 24 (Completion) hereof.

“Precommissioning” means the testing, checking and other requirements specified in the Employer’s Requirements that are to be carried out by the Contractor in preparation for Commissioning as





provided in GCC Clause 24 (Completion) hereof.

“Commissioning” means operation of the Facilities or any part thereof by the Contractor following Completion, which operation is to be carried out by the Contractor as provided in GCC Subclause 25.1 (Commissioning) hereof, for the purpose of carrying out Guarantee Test(s).

“Guarantee Test(s)” means the test(s) specified in the Employer’s Requirements to be carried out to ascertain whether the Facilities or a specified part thereof is able to attain the Functional Guarantees specified in the Appendix (Functional Guarantees) to the Contract Agreement in accordance with the provisions of GCC Subclause 25.2 (Guarantee Test) hereof.

“Operational Acceptance” means the acceptance by the Employer of the Facilities (or any part of the Facilities where the Contract provides for acceptance of the Facilities in parts), which certifies the Contractor’s fulfillment of the Contract in respect of Functional Guarantees of the Facilities (or the relevant part thereof) in accordance with the provisions of GCC Clause 28 (Functional Guarantees) hereof and shall include deemed acceptance in accordance with GCC Clause 25 (Commissioning and Operational Acceptance) hereof.

“Defect Liability Period” means the period of validity of the warranties given by the Contractor commencing at Completion of the Facilities or a part thereof, during which the Contractor is responsible for defects with respect to the Facilities (or the relevant part thereof) as provided in GCC Clause 27 (Defect Liability) hereof.

- |                              |  |
|------------------------------|--|
| <b>2. Contract Documents</b> | 2.1 Subject to Article 1.2 (Order of Precedence) of the Contract Agreement, all documents forming part of the Contract (and all parts thereof) are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole.  |
| <b>3. Interpretation</b>     | 3.1 In the Contract, except where the context requires otherwise, <ul style="list-style-type: none"><li>(a) words indicating one gender include all genders;</li><li>(b) words indicating the singular also include the plural and words indicating the plural also include the singular;</li><li>(c) provisions including the word “agree,” “agreed,” or “agreement” require the agreement to be record in writing;</li><li>(d) the word “tender” is synonymous with “bid,” “tenderer” with “Bidder,” and “tender documents” with “Bidding Documents;” and</li><li>(e) “written” or “in writing” means handwritten, typewritten, printed or electronically made, and resulting in a permanent record.</li></ul> |

The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

**3.2 Incoterms**

Unless inconsistent with any provision of the Contract, the meaning of any trade term and the rights and obligations of parties thereunder shall be as prescribed by Incoterms.



“Incoterms” means international rules for interpreting trade terms published by the International Chamber of Commerce (latest edition), 38 Cours Albert 1<sup>er</sup>, 75008 Paris, France.

3.3 Entire Agreement

Subject to GCC Subclause 16.4 hereof, the Contract constitutes the entire agreement between the Employer and Contractor with respect to the subject matter of Contract and supersedes all communications, negotiations, and agreements (whether written or oral) of parties with respect thereto made prior to the date of Contract.

3.4 Amendment

No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each party hereto.

3.5 Independent Contractor

The Contractor shall be an independent contractor performing the Contract. The Contract does not create any agency, partnership, joint venture, or other joint relationship between the parties hereto. Subject to the provisions of the Contract, the Contractor shall be solely responsible for the manner in which the Contract is performed. All employees, representatives, or Subcontractors engaged by the Contractor in connection with the performance of the Contract shall be under the complete control of the Contractor and shall not be deemed to be employees of the Employer, and nothing contained in the Contract or in any subcontract awarded by the Contractor shall be construed to create any contractual relationship between any such employees, representatives, or Subcontractors and the Employer.

3.6 Non-Waiver

3.6.1 Subject to GCC Subclause 3.6.2 below, no relaxation, forbearance, delay, or indulgence by either party in enforcing any of the terms and conditions of the Contract or the granting of time by either party to the other shall prejudice, affect, or restrict the rights of that party under the Contract, nor shall any waiver by either party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.

3.6.2 Any waiver of a party's rights, powers, or remedies under the Contract must be in writing, must be dated, and signed by an authorized representative of the party granting such waiver, and must specify the right and the extent to which it is being waived.

3.7 Severability

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity, or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

3.8 Country of Origin

“Origin” means the place where the plant and component parts thereof are mined, grown, produced, or manufactured, and from which the services are provided. Plant components are produced when, through



manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially in its basic characteristics or in purpose or utility from its components.

- 4. Communications**
- 4.1 Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests, and discharges, these communications shall be
- (a) in writing and delivered against receipt; and
  - (b) delivered, sent, or transmitted to the address for the recipient's communications as stated in the Contract Agreement.

When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Project Manager, a copy shall be sent to the Project Manager or the other Party, as the case may be.

- 5. Law and Language**
- 5.1 The Contract shall be governed by and interpreted in accordance with laws of the country specified in the SCC.
- 5.2 The ruling language of the Contract shall be that stated in the SCC.
- 5.3 The language for communications shall be the ruling language unless otherwise stated in the SCC.

- 6. Fraud and Corruption**
- 6.1 If the Employer determines that the Contractor and/or any of its personnel, or its agents, or its Subcontractors, sub-consultants, services providers, suppliers and/or their employees has engaged in corrupt, fraudulent, collusive coercive, or obstructive practices, in competing for or in executing the Contract, then the Employer may, after giving 14 days' notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site, and the provisions of Clause 42 shall apply as if such expulsion had been made under Sub-Clause 42.2.1 (c).

For the purposes of this Sub-Clause,

- (i) "corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
- (ii) "fraudulent practice" is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
- (iii) "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
- (iv) "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
- (v) "obstructive practice" is
- (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a GoN investigation into allegations of a corrupt, fraudulent, coercive or



collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or

- (bb) acts intended to materially impede the exercise of the GoN's inspection and audit rights provided for under Sub-Clause 9.6.

## B. Subject Matter of Contract

### 7. Scope of Facilities

- 7.1 Unless otherwise expressly limited in the Employer's Requirements, the Contractor's obligations cover the provision of all Plant and the performance of all Installation Services required for the design, the manufacture (including procurement, quality assurance, construction, installation, associated civil works, pre-commissioning and delivery) of the Plant and the installation, completion, and commissioning of the Facilities in accordance with the plans, procedures, specifications, drawings, codes, and any other documents as specified in the section Employer's Requirements. Such specifications include, but are not limited to, the provision of supervision and engineering services; the supply of labor, materials, equipment, spare parts (as specified in GCC Subclause 7.3 below) and accessories; Contractor's Equipment; construction utilities and supplies; temporary materials, structures, and facilities; transportation (including, without limitation, unloading and hauling to, from and at the Site); and storage, except for those supplies, works, and services that will be provided or performed by the Employer, as set forth in the Appendix (Scope of Works and Supply by the Employer) to the Contract Agreement.
- 7.2 The Contractor shall, unless specifically excluded in the Contract, perform all such work and/or supply all such items and materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Completion of the Facilities as if such work and/or items and materials were expressly mentioned in the Contract.
- 7.3 In addition to the supply of Mandatory Spare Parts included in the Contract, the Contractor agrees to supply spare parts required for the operation and maintenance of the Facilities for the period specified in the SCC and the provisions, if any, specified in the SCC. However, the identity, specifications, and quantities of such spare parts and the terms and conditions relating to the supply thereof are to be agreed between the Employer and the Contractor, and the price of such spare parts shall be that given in Price Schedule No. 6, which shall be added to the Contract Price. The price of such spare parts shall include the purchase price therefore and other costs and expenses (including the Contractor's fees) relating to the supply of spare parts.

### 8. Time for Commencement and Completion

- 8.1 The Contractor shall commence work on the Facilities within the period specified in the SCC and without prejudice to GCC Subclause 26.2 hereof, the Contractor shall thereafter proceed with the Facilities in accordance with the time schedule specified in the Appendix 4 (Time Schedule) to the Contract Agreement.
- 8.2 The Contractor shall attain Completion of the Facilities or of a part



where a separate time for Completion of such part is specified in the Contract, within the time stated in the SCC or within such extended time to which the Contractor shall be entitled under GCC Clause 40 hereof.

**9. Contractor's Responsibilities**

- 9.1 The Contractor shall design, manufacture, including associated purchases and/or subcontracting, install, and complete the Facilities in accordance with the Contract. When completed, the Facilities should be fit for the purposes for which they are intended as defined in the Contract.
- 9.2 The Contractor confirms that it has entered into this Contract on the basis of a proper examination of the data relating to the Facilities, including any data as to boring tests provided by the Employer, and on the basis of information that the Contractor could have obtained from a visual inspection of the Site if access thereto was available and of other data readily available to it relating to the Facilities as of the date 30 days prior to bid submission. The Contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the Facilities.
- 9.3 The Contractor shall acquire and pay for all permits, approvals, and/or licenses from all local, state, or national government authorities or public service undertakings in the country where the Site is located, which such authorities or undertakings require the Contractor to obtain in its name and which are necessary for the performance of the Contract, including, without limitation, visas for the Contractor's and Subcontractor's personnel and entry permits for all imported Contractor's Equipment. The Contractor shall acquire all other permits, approvals, and/or licenses that are not the responsibility of the Employer under GCC Subclause 10.3 hereof and that are necessary for the performance of the Contract.
- 9.4 The Contractor shall comply with all laws in force in the country where the Facilities are to be implemented. The laws will include all local, state, national, or other laws that affect the performance of the Contract and bind upon the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any and all liabilities, damages, claims, fines, penalties, and expenses of whatever nature arising or resulting from the violation of such laws by the Contractor or its personnel, including the Subcontractors and their personnel, but without prejudice to GCC Subclause 10.1 hereof.
- 9.5 Any plant and services that will be incorporated in or be required for the Facilities and other supplies shall have their origin as specified under GCC Clause 1 (Country of Origin). Any Subcontractors retained by the Contractor shall be from a country as specified in GCC Clause 1 (Country of Origin).
- 9.6 The Contractor shall permit GON/DP to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by GON/DP, if so required by GON/DP.
- 9.7 If the Contractor is a joint venture or consortium of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfillment of the provisions of the Contract and shall



designate one of such persons to act as a leader with authority to bind the joint venture or consortium. The composition or the constitution of the joint venture or consortium shall not be altered without the prior consent of the Employer.

#### 9.8 Protection of the Environment

- (a) The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise, and other results of his operations.
- (b) The Contractor shall ensure that emissions, surface discharges, and effluent from the Contractor's activities shall not exceed the values stated in the Specification or prescribed by applicable Laws.

#### 10. Employer's Responsibilities

- 10.1 All information and/or data to be supplied by the Employer as described in the Appendix (Scope of Works and Supply by the Employer) to the Contract Agreement shall be deemed to be accurate, except when the Employer expressly states otherwise.
- 10.2 The Employer shall be responsible for acquiring and providing legal and physical possession of the Site and access thereto, and for providing possession of and access to all other areas reasonably required for the proper execution of the Contract, including all requisite rights of way, as specified in the Appendix (Scope of Works and Supply by the Employer) to the Contract Agreement. The Employer shall give full possession of and accord all rights of access thereto on or before the date(s) specified in that Appendix.
- 10.3 The Employer shall acquire and pay for all permits, approvals, and/or licenses from all local, state, or national government authorities, or public service undertakings in the country where the Site is located which (a) such authorities or undertakings require the Employer to obtain in the Employer's name, (b) are necessary for the execution of the Contract, including those required for the performance by both the Contractor and the Employer of their respective obligations under the Contract, and (c) are specified in the Appendix (Scope of Works and Supply by the Employer) to the Contract Agreement.
- 10.4 If requested by the Contractor, the Employer shall use its best endeavors to assist the Contractor in obtaining in a timely and expeditious manner all permits, approvals, and/or licenses necessary for the execution of the Contract from all local, state, or national government authorities, or public service undertakings that such authorities or undertakings require the Contractor or Subcontractors or the personnel of the Contractor or Subcontractors, as the case may be, to obtain.
- 10.5 Unless otherwise specified in the Contract or agreed upon by the Employer and the Contractor, the Employer shall provide sufficient, properly qualified operating and maintenance personnel; shall supply and make available all raw materials, utilities, lubricants, chemicals, catalysts, other materials and facilities; and shall perform all work and services of whatsoever nature, including those required by the Contractor to properly carry out Pre-commissioning, Commissioning, and Guarantee Tests, all in accordance with the provisions of the Appendix (Scope of Works and Supply by the Employer) to the





Contract Agreement at or before the time specified in the program furnished by the Contractor under GCC Subclause 18.2 hereof and in the manner thereupon specified or as otherwise agreed upon by the Employer and the Contractor.

- 10.6 The Employer shall be responsible for the continued operation of the Facilities after Completion, in accordance with GCC Subclause 24.8, and shall be responsible for facilitating the Guarantee Test(s) for the Facilities, in accordance with GCC Subclause 25.2.
- 10.7 All costs and expenses involved in the performance of the obligations under this GCC Clause 10 shall be the responsibility of the Employer, except those incurred by the Contractor with respect to the performance of Guarantee Tests, in accordance with GCC Subclause 25.2.
- 10.8 In the event that the Employer shall be in breach of any of his obligations imposed by the Contract, then the additional cost reasonably incurred by the Contractor in consequence thereof shall be added to the Contract Price.

### C. Payment

#### 11. Contract Price

- 11.1 The Contract Price shall be as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement.
- 11.2 Unless an adjustment clause is provided for in the SCC, the Contract Price shall be a firm lump sum not subject to any alteration, except in the event of a Change in the Facilities or as otherwise provided in the Contract.
- 11.3 Subject to GCC Subclauses 9.2, 10.1, and 35 hereof, the Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.

#### 12. Terms of Payment

- 12.1 The Contract Price shall be paid as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement and in the Appendix (Terms and Procedures of Payment) to the Contract Agreement, which also outlines the procedures to be followed in making application for and processing payments.
- 12.2 No payment made by the Employer herein shall be deemed to constitute acceptance by the Employer of the Facilities or any part(s) thereof.
- 12.3 In the event that the Employer fails to make any payment by its respective due date or within the period set forth in the Contract, the Employer shall pay to the Contractor interest on the amount of such delayed payment at the rate(s) shown in the Appendix (Terms and Procedures of Payment) to the Contract Agreement for the period of delay until payment has been made in full, whether before or after judgment or arbitration award.
- 12.4 The currency or currencies in which payments are made to the Contractor under this Contract shall be specified in the Appendix (Terms and Procedures of Payment) to the Contract Agreement,



subject to the general principle that payments will be made in the currency or currencies in which the Contract Price has been stated in the Contractor's bid.

### 13. Securities

#### 13.1 Issuance of Securities

The Contractor shall provide the securities specified below in favor of the Employer at the times, and in the amount, manner, and form specified below.

#### 13.2 Advance Payment Security

13.2.1 The Contractor shall, within 30 days of the notification of contract award, provide a security in an amount equal to the advance payment calculated in accordance with the Appendix (Terms and Procedures of Payment) to the Contract Agreement, and in the same currency or currencies.

13.2.2 The security shall be in the form provided in the Bidding Documents or in another form acceptable to the Employer. The amount of the security shall be reduced in proportion to the value of the Facilities executed by and paid to the Contractor from time to time, and shall automatically become null and void when the full amount of the advance payment has been recovered by the Employer. The security shall be returned to the Contractor immediately after its expiration.

#### 13.3 Performance Security

13.3.1 The Contractor shall, within 30 days of the notification of contract award, provide a security for the due performance of the Contract in the amount specified in the SCC.

13.3.2 The security shall be denominated in the currency or currencies of the Contract, or in a freely convertible currency acceptable to the Employer, and shall be in one of the forms of bank guarantees provided in the Bidding Documents, as stipulated by the Employer in the SCC, or in another form acceptable to the Employer.

13.3.3 Unless otherwise specified in the SCC, the security shall be reduced by half on the date of the Operational Acceptance. The Security shall become null and void, or shall be reduced pro rata to the Contract Price of a part of the Facilities for which a separate Time for Completion is provided, 540 days after Completion of the Facilities or 365 days after Operational Acceptance of the Facilities, whichever occurs first; provided, however, that if the Defects Liability Period has been extended on any part of the Facilities pursuant to GCC Subclause 27.8 hereof, the Contractor shall issue an additional security in an amount proportionate to the Contract Price of that part. The security shall be returned to the Contractor immediately after its expiration, provided, however, that if the Contractor, pursuant to GCC Subclause 27.10, is liable for an extended defect liability obligation, the performance security shall be extended for the period and up to the amount specified in the SCC.

### 14. Taxes and Duties

14.1 Except as otherwise specifically provided in the Contract, the Contractor shall bear and pay all taxes, duties, levies, and charges





assessed on the Contractor, its Subcontractors, or their employees by all municipal, state, or national government authorities in connection with the Facilities in and outside of the country where the Site is located.

- 14.2 Notwithstanding GCC Subclause 14.1 above, the Employer shall bear and promptly pay all customs and import duties as well as other local taxes like, e.g., a value-added tax (VAT), imposed by the law of the country where the Site is located on the Plant specified in Price Schedule No. 1 and that are to be incorporated into the Facilities.
- 14.3 If any tax exemptions, reductions, allowances, or privileges may be available to the Contractor in the country where the Site is located, the Employer shall use its best endeavors to enable the Contractor to benefit from any such tax savings to the maximum allowable extent.
- 14.4 For the purpose of the Contract, it is agreed that the Contract Price specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement is based on the taxes, duties, levies, and charges prevailing at the date 30 days prior to the date of bid submission in the country where the Site is located (hereinafter called "Tax" in this GCC Subclause 14.4). If any rates of Tax are increased or decreased, a new Tax is introduced, an existing Tax is abolished, or any change in interpretation or application of any Tax occurs in the course of the performance of Contract, which was or will be assessed on the Contractor, Subcontractors, or their employees in connection with performance of the Contract, an equitable adjustment of the Contract Price shall be made to fully take into account any such change by addition to the Contract Price or deduction therefrom, as the case may be, in accordance with GCC Clause 36 hereof.

## D. Intellectual Property

### 15. License/Use of Technical Information

- 15.1 For the operation and maintenance of the Plant, the Contractor hereby grants a non-exclusive and nontransferable license (without the right to sublicense) to the Employer under the patents, utility models, or other industrial property rights owned by the Contractor or by a third party from whom the Contractor has received the right to grant licenses thereunder, and shall also grant to the Employer a nonexclusive and nontransferable right (without the right to sublicense) to use the know-how and other technical information disclosed to the Employer under the Contract. Nothing contained herein shall be construed as transferring ownership of any patent, utility model, trademark, design, copyright, know-how, or other intellectual property right from the Contractor or any third party to the Employer.
- 15.2 The copyright in all drawings, documents, and other materials containing data and information furnished to the Employer by the Contractor herein shall remain vested in the Contractor or, if they are furnished to the Employer directly or through the Contractor by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party.

### 16. Confidential

- 16.1 The Employer and the Contractor shall keep confidential and shall not,



## Information

without the written consent of the other party hereto, divulge to any third party any documents, data or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during, or following termination of the Contract. Notwithstanding the above, the Contractor may furnish to its Subcontractor(s) such documents, data, and other information it receives from the Employer to the extent required for the Subcontractor(s) to perform its work under the Contract, in which event the Contractor shall obtain from such Subcontractor(s) an undertaking of confidentiality similar to that imposed on the Contractor under this GCC Clause 16.

- 16.2 The Employer shall not use such documents, data, and other information received from the Contractor for any purpose other than the operation and maintenance of the Facilities. Similarly, the Contractor shall not use such documents, data, and other information received from the Employer for any purpose other than the design, procurement of Plant, construction, or such other work and services as are required for the performance of the Contract.
- 16.3 The obligation of a party under GCC Subclauses 16.1 and 16.2 above, however, shall not apply to that information, which
- (a) now or hereafter enters the public domain through no fault of that party;
  - (b) can be proven to have been possessed by that party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other party hereto; and
  - (c) otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality.
- 16.4 The above provisions of this GCC Clause 16 shall not in any way modify any undertaking of confidentiality given by either of the parties hereto prior to the date of the Contract in respect of the Facilities or any part thereof.
- 16.5 The provisions of this GCC Clause 16 shall survive termination, for whatever reason, of the Contract.

## E. Execution of the Facilities

### 17. Representatives 17.1 Project Manager

If the Project Manager is not named in the Contract, then within 14 days of the Effective Date, the Employer shall appoint and notify the Contractor in writing of the name of the Project Manager. The Employer may from time to time appoint some other person as the Project Manager in place of the person previously so appointed, and shall give notice of the name of such other person to the Contractor without delay. No such appointment shall be made at such a time or in such a manner as to impede the progress of work on the Facilities. Such appointment shall only take effect upon receipt of such notice by the Contractor. The Project Manager shall represent and act for the Employer at all times during the performance of the Contract. All notices, instructions, orders, certificates, approvals, and all other



communications under the Contract shall be given by the Project Manager, except as herein otherwise provided.

All notices, instructions, information, and other communications given by the Contractor to the Employer under the Contract shall be given to the Project Manager, except as herein otherwise provided.

**17.2 Contractor's Representative and Construction Manager**

17.2.1 If the Contractor's Representative is not named in the Contract, then within 14 days of the Effective Date, the Contractor shall appoint the Contractor's Representative and shall request the Employer in writing to approve the person so appointed. If the Employer makes no objection to the appointment within 14 days, the Contractor's Representative shall be deemed to have been approved. If the Employer objects to the appointment within 14 days giving the reason therefor, then the Contractor shall appoint a replacement within 14 days of such objection, and the foregoing provisions of this GCC Subclause 17.2.1 shall apply thereto.

17.2.2 The Contractor's Representative shall represent and act for the Contractor at all times during the performance of the Contract and shall give to the Project Manager all the Contractor's notices, instructions, information, and all other communications under the Contract.

All notices, instructions, information, and all other communications given by the Employer or the Project Manager to the Contractor under the Contract shall be given to the Contractor's Representative or, in its absence, its deputy, except as herein otherwise provided.

The Contractor shall not revoke the appointment of the Contractor's Representative without the Employer's prior written consent, which shall not be unreasonably withheld. If the Employer consents thereto, the Contractor shall appoint some other person as the Contractor's Representative, pursuant to the procedure set out in GCC Subclause 17.2.1.

17.2.3 The Contractor's Representative may, subject to the approval of the Employer which shall not be unreasonably withheld, at any time delegate to any person any of the powers, functions and authorities vested in him or her. Any such delegation may be revoked at any time. Any such delegation or revocation shall be subject to a prior notice signed by the Contractor's Representative, and shall specify the powers, functions, and authorities thereby delegated or revoked. No such delegation or revocation shall take effect unless and until a copy thereof has been delivered to the Employer and the Project Manager.

Any act or exercise by any person of powers, functions and authorities so delegated to him or her in accordance with this GCC Subclause 17.2.3 shall be deemed to be an act or exercise by the Contractor's Representative.

17.2.4 From the commencement of installation of the Facilities at the Site until Completion, the Contractor's Representative shall appoint a suitable person as the Construction Manager. The



Construction Manager shall supervise all work done at the Site by the Contractor and shall be present at the Site throughout normal working hours except when on leave, sick, or absent for reasons connected with the proper performance of the Contract. Whenever the Construction Manager is absent from the Site, the Contractor's Representative or the Construction Manager shall appoint a suitable person to act as the Construction Manager's deputy.

17.2.5 The Employer may by notice to the Contractor object to any representative or person employed by the Contractor in the execution of the Contract who, in the reasonable opinion of the Employer, may behave inappropriately, may be incompetent or negligent, or may commit a serious breach of the Site regulations provided under GCC Subclause 22.4. The Employer shall provide evidence of the same, whereupon the Contractor shall remove such person from the Facilities.

17.2.6 If any representative or person employed by the Contractor is removed in accordance with GCC Subclause 17.2.5, the Contractor shall, where required, promptly appoint a replacement.

## 18. Work Program

### 18.1 Contractor's Organization

The Contractor shall supply to the Employer and the Project Manager a chart showing the proposed organization to be established by the Contractor for carrying out work on the Facilities within 21 days of the Effective Date. The chart shall include the identities of the key personnel, and the curricula vitae of such key personnel to be employed shall be supplied together with the chart. The Contractor shall promptly inform the Employer and the Project Manager in writing of any revision or alteration of such an organization chart.

### 18.2 Program of Performance

Within 30 days after the Effective Date, the Contractor shall submit to the Project Manager a detailed program of performance of the Contract, made in a form acceptable to the Project Manager and showing the sequence in which it proposes to design, manufacture, transport, assemble, install, and pre-commission the Facilities, as well as the date by which the Contractor reasonably requires that the Employer shall have fulfilled its obligations under the Contract so as to enable the Contractor to execute the Contract in accordance with the program and to achieve Completion, Commissioning, and Acceptance of the Facilities in accordance with the Contract. The program so submitted by the Contractor shall accord with the Time Schedule included in the Appendix (Time Schedule) to the Contract Agreement and any other dates and periods specified in the Contract. The Contractor shall update and revise the program as and when appropriate or when required by the Project Manager, but without modification in the Times for Completion given in the SCC and any extension granted in accordance with GCC Clause 40, and shall submit all such revisions to the Project Manager.

### 18.3 Progress Report

The Contractor shall monitor progress of all the activities specified in



the program referred to in GCC Subclause 18.2 above, and supply a progress report to the Project Manager every month.

The progress report shall be in a form acceptable to the Project Manager and shall indicate: (a) percentage completion achieved compared with the planned percentage completion for each activity; and (b) where any activity is behind the program, giving comments and likely consequences and stating the corrective action being taken.

**18.4 Progress of Performance**

If at any time the Contractor's actual progress falls behind the program referred to in GCC Subclause 18.2, or it becomes apparent that it will so fall behind, the Contractor shall, at the request of the Employer or the Project Manager, prepare and submit to the Project Manager a revised program, taking into account the prevailing circumstances, and shall notify the Project Manager of the steps being taken to expedite progress so as to attain Completion of the Facilities within the Time for Completion under GCC Subclause 8.2, any extension thereof entitled under GCC Subclause 40.1, or any extended period as may otherwise be agreed upon between the Employer and the Contractor.

**18.5 Procedures**

The Contract shall be executed in accordance with the Contract Documents including the procedures given in the Forms and Procedures of the Employer's Requirements.

The Contractor may execute the Contract in accordance with its own standard project execution plans and procedures to the extent that they do not conflict with the provisions contained in the Contract.

**19.Subcontracting**

- 19.1 The Appendix 5 (List of Major Items of Plant and Services and List of Approved Subcontractors) to the Contract Agreement specifies major items of plant and services and a list of approved Subcontractors against each item, including manufacturers. Insofar as no Subcontractors are listed against any such item, the Contractor shall prepare a list of Subcontractors for such item for inclusion in such list. The Contractor may from time to time propose any addition to or deletion from any such list. The Contractor shall submit any such list or any modification thereto to the Employer for its approval in sufficient time so as not to impede the progress of work on the Facilities. Such approval by the Employer for any of the Subcontractors shall not relieve the Contractor from any of its obligations, duties, or responsibilities under the Contract.
- 19.2 The Contractor shall select and employ its Subcontractors for such major items from those listed in the lists referred to in GCC Subclause 19.1.
- 19.3 For items or parts of the Facilities not specified in the Appendix (List of Major Items of Plant and Services and List of Approved Subcontractors for Major Items) to the Contract Agreement, the Contractor may employ such Subcontractors as it may select, at its discretion.
- 19.4 Each subcontract shall include provisions which would entitle the Employer to require the sub-contract to be assigned to the Employer under GCC 19.5 (if and when applicable), or in event of termination by



the Employer under GCC 42.2.

- 19.5 If a Sub-contractor's obligations extend beyond the expiry date of the relevant Defects Liability Period and the Project Manager, prior to that date, instructs the Contractor to assign the benefits of such obligations to the Employer, then the Contractor shall do so.

## 20. Design and Engineering

### 20.1 Specifications and Drawings

- 20.1.1 The Contractor shall execute the basic and detailed design and the engineering work in compliance with the provisions of the Contract, or where not so specified, in accordance with good engineering practice.

The Contractor shall be responsible for any discrepancies, errors, or omissions in the specifications, drawings, and other technical documents that it has prepared, whether such specifications, drawings, and other documents have been approved by the Project Manager or not, provided that such discrepancies, errors, or omissions are not because of inaccurate information furnished in writing to the Contractor by or on behalf of the Employer.

- 20.1.2 The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification, or other document, or any modification thereof provided or designated by or on behalf of the Employer, by giving a notice of such disclaimer to the Project Manager.

### 20.2 Codes and Standards

Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date 30 days prior to date of bid submission shall apply unless otherwise specified. During Contract execution, any changes in such codes and standards shall be applied subject to approval by the Employer and shall be treated in accordance with GCC Clause 39.

### 20.3 Approval/Review of Technical Documents by Project Manager

- 20.3.1 The Contractor shall prepare or cause its Subcontractors to prepare, and furnish to the Project Manager the documents listed in the Appendix (List of Documents for Approval or Review) to the Contract Agreement for its approval or review as specified and in accordance with the requirements of GCC Subclause 18.2 (Program of Performance).

Any part of the Facilities covered by or related to the documents to be approved by the Project Manager shall be executed only after the Project Manager's approval thereof.

GCC Subclauses 20.3.2 through 20.3.7 shall apply to those documents requiring the Project Manager's approval, but not to those furnished to the Project Manager for its review only.

- 20.3.2 Within 14 days after receipt by the Project Manager of any document requiring the Project Manager's approval in accordance with GCC Subclause 20.3.1, the Project Manager shall either return one copy thereof to the Contractor with its approval endorsed thereon or shall notify the Contractor in





writing of its disapproval thereof and the reasons therefor and the modifications that the Project Manager proposes.

If the Project Manager fails to take such action within the said 14 days, then the said document shall be deemed to have been approved by the Project Manager.

20.3.3 The Project Manager shall not disapprove any document, except on the grounds that the document does not comply with the Contract or that it is contrary to good engineering practice. If the Project Manager disapproves a document, he shall specify the reasons for his decision.

20.3.4 If the Project Manager disapproves the document, the Contractor shall modify the document and resubmit it for the Project Manager's approval in accordance with GCC Subclause 20.3.2. If the Project Manager approves the document subject to modification(s), the Contractor shall make the required modification(s), whereupon the document shall be deemed to have been approved.

20.3.5 If any dispute or difference occurs between the Employer and the Contractor in connection with or arising out of the disapproval by the Project Manager of any document and/or any modification(s) thereto that cannot be settled between the parties within a reasonable period, then such dispute or difference may be referred to an Dispute Board for determination in accordance with GCC Subclause 45.3 hereof. If such dispute or difference is referred to an Dispute Board, the Project Manager shall give instructions as to whether and, if so, how, performance of the Contract is to proceed. The Contractor shall proceed with the Contract in accordance with the Project Manager's instructions, provided that if the Dispute Board upholds the Contractor's view on the dispute and if the Employer has not given notice under Subclause 45.3 hereof, then the Contractor shall be reimbursed by the Employer for any additional costs incurred by reason of such instructions and shall be relieved of such responsibility or liability in connection with the dispute and the execution of the instructions as the Dispute Board shall decide, and the Time for Completion shall be extended accordingly.

20.3.6 The Project Manager's approval, with or without modification of the document furnished by the Contractor, shall not relieve the Contractor of any responsibility or liability imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by the Project Manager.

20.3.7 The Contractor shall not depart from any approved document unless the Contractor has first submitted to the Project Manager an amended document and obtained the Project Manager's approval thereof, pursuant to the provisions of this GCC Subclause 20.3.

If the Project Manager requests any change in any already approved document and/or in any document based thereon, the



provisions of GCC Clause 39 shall apply to such request.

## 21. Procurement

### 21.1 Materials

Subject to GCC Subclause 14.2, the Contractor shall procure and transport all materials in an expeditious and orderly manner to the Site.

### 21.2 Employer-Supplied Materials

If the Appendix (Scope of Works and Supply by the Employer) to the Contract Agreement provides that the Employer shall furnish any specific items to the Contractor, the following provisions shall apply:

21.2.1 The Employer shall, at its own risk and expense, transport each item to the place on or near the Site as agreed upon by the parties and make such item available to the Contractor at the time specified in the program furnished by the Contractor, pursuant to GCC Subclause 18.2, unless otherwise mutually agreed.

21.2.2 Upon receipt of such item, the Contractor shall inspect the same visually and notify the Project Manager of any detected shortage, defect, or default. The Employer shall immediately remedy any shortage, defect, or default, or the Contractor shall, if practicable and possible, at the request of the Employer, remedy such shortage, defect, or default at the Employer's cost and expense. After inspection, such item shall fall under the care, custody, and control of the Contractor. The provision of this GCC Subclause 21.2.2 shall apply to any item supplied to remedy any such shortage or default or to substitute for any defective item, or shall apply to defective items that have been repaired.

21.2.3 The foregoing responsibilities of the Contractor and its obligations of care, custody, and control shall not relieve the Employer of liability for any undetected shortage, defect, or default, nor place the Contractor under any liability for any such shortage, defect or default whether under GCC Clause 27 or under any other provision of Contract.

### 21.3 Transportation

21.3.1 The Contractor shall at its own risk and expense transport all the materials and the Contractor's Equipment to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances.

21.3.2 Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the materials and the Contractor's Equipment.

21.3.3 Upon dispatch of each shipment of materials and the Contractor's Equipment, the Contractor shall notify the Employer by telex, cable, facsimile, or electronic means, of the description of the materials and of the Contractor's Equipment, the point and means of dispatch, and the estimated time and point of arrival in the country where the Site is located, if applicable, and at the Site. The Contractor shall furnish the Employer with relevant shipping documents to be agreed upon between the parties.





21.3.4 The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the materials and the Contractor's Equipment to the Site. The Employer shall use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any claim for damage to roads, bridges, or any other traffic facilities that may be caused by the transport of the materials and the Contractor's Equipment to the Site.

21.4 Customs Clearance

The Contractor shall, at its own expense, handle all imported materials and Contractor's Equipment at the point(s) of import and shall handle any formalities for customs clearance, subject to the Employer's obligations under GCC Subclause 14.2, provided that if applicable laws or regulations require any application or act to be made by or in the name of the Employer, the Employer shall take all necessary steps to comply with such laws or regulations. In the event of delays in customs clearance that are not the fault of the Contractor, the Contractor shall be entitled to an extension in the Time for Completion, pursuant to GCC Clause 40.

**22. Installation**

22.1 Setting Out/Supervision

22.1.1 Benchmark

- (a) The Contractor shall be responsible for the true and proper setting-out of the Facilities in relation to bench marks, reference marks, and lines provided to it in writing by or on behalf of the Employer.
- (b) If, at any time during the progress of installation of the Facilities, any error shall appear in the position, level, or alignment of the Facilities, the Contractor shall forthwith notify the Project Manager of such error and, at its own expense, immediately rectify such error to the reasonable satisfaction of the Project Manager. If such error is based on incorrect data provided in writing by or on behalf of the Employer, the expense of rectifying the same shall be borne by the Employer.

22.1.2 Contractor's Supervision

The Contractor shall give or provide all necessary superintendence during the installation of the Facilities, and the Construction Manager or its deputy shall be constantly on the Site to provide full-time superintendence of the installation. The Contractor shall provide and employ only technical personnel who are skilled and experienced in their respective callings and supervisory staff who are competent to adequately supervise the work at hand.

22.2 Labor

22.2.1 Engagement of Staff and Labor

- (a) Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement



of all staff and labor, local or otherwise, and for their payment, housing, feeding, and transport.

- (b) The Contractor shall provide and employ on the Site in the installation of the Facilities such skilled, semi-skilled, and unskilled labor as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged to use local labor that has the necessary skills.
- (c) The Contractor shall be responsible for obtaining all necessary permit(s) and/or visa(s) from the appropriate authorities for the entry of all labor and personnel to be employed on the Site into the country where the Site is located. The Employer will, if requested by the Contractor, use his best endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national, or government permission required for bringing in the Contractor's personnel.
- (d) The Contractor shall at its own expense provide the means of repatriation to all of its and its Subcontractor's personnel employed on the Contract at the Site to the place where they were recruited or to their domicile. It shall also provide suitable temporary maintenance of all such persons from the cessation of their employment on the Contract to the date programmed for their departure. In the event that the Contractor defaults in providing such means of transportation and temporary maintenance, the Employer may provide the same to such personnel and recover the cost of doing so from the Contractor.

#### 22.2.2 Persons in the Service of Employer

The Contractor shall not recruit, or attempt to recruit, staff and labor from amongst the Employer's Personnel.

#### 22.2.3 Labor Laws

- (a) The Contractor shall comply with all the relevant labor Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration, and emigration, and shall allow them all their legal rights.
- (b) The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous, or disorderly conduct or behavior by or amongst its employees and the labor of its Subcontractors.
- (c) The Contractor shall, in all dealings with its labor and the labor of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious, or other customs and all local laws and regulations pertaining to the employment of labor.

#### 22.2.4 Rates of Wages and Conditions of Labor

- (a) The Contractor shall pay rates of wages, and observe conditions of labor, which are not lower than those



established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by employers whose trade or industry is similar to that of the Contractor.

- (b) The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in the Country in respect of such of their salaries, wages, and allowances as are chargeable under the Laws for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.

#### 22.2.5 Working Hours

- (a) No work shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours stated in the SCC, unless
  - (i) otherwise stated in the Contract;
  - (ii) the Project Manager gives consent; or
  - (iii) the work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Project Manager.
- (b) If and when the Contractor considers it necessary to carry out work at night or on public holidays so as to meet the Time for Completion and requests the Project Manager's consent thereto, the Project Manager shall not unreasonably withhold such consent.
- (c) This Subclause shall not apply to any work which is customarily carried out by rotary or double shifts.

#### 22.2.6 Facilities for Staff and Labor

- (a) Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Employer's Personnel as stated in the Specification.
- (b) The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

#### 22.2.7 Health and Safety

- (a) The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay, and ambulance service are available at all times at the Site and at any



accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

- (b) The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the performance of the Contract, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.
- (c) The Contractor shall send to the Project Manager, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety, and welfare of persons, and damage to property, as the Project Manager may reasonably require.

#### 22.2.8 Funeral Arrangements

In the event of the death of any of the Contractor's personnel or accompanying members of their families, the Contractor shall be responsible for making the appropriate arrangements for their return or burial, unless otherwise specified in the SCC.

#### 22.2.9 Records of Contractor's Personnel

The Contractor shall keep accurate records of the Contractor's personnel, including the number of each class of Contractor's Personnel on the Site and the names, ages, gender, hours worked, and wages paid to all workers. These records shall be summarized on a monthly basis in a form approved by the Project Manager and shall be available for inspection by the Project Manager until the Contractor has completed all work.

#### 22.2.10 Supply of Foodstuff

The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract.

#### 22.2.11 Supply of Water

The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.

#### 22.2.12 Measures against Insect and Pest Nuisance

The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce their danger to health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.



**22.2.13 Alcoholic Liquor or Drugs**

The Contractor shall not, otherwise than in accordance with the Laws of the Country, import, sell, give barter, or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift barter, or disposal by Contractor's Personnel.

**22.2.14 Arms and Ammunition**

The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.

**22.2.15 Prohibition of All Forms of Forced or Compulsory Labor**

The contractor shall not employ "forced or compulsory labor" in any form. "Forced or compulsory labor" consists of all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.

**22.2.16 Prohibition of Harmful Child Labor**

The Contractor shall not employ any child to perform any work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.

**22.3 Contractor's Equipment**

22.3.1 All Contractor's Equipment brought by the Contractor onto the Site shall be deemed to be intended to be used exclusively for the execution of the Contract. The Contractor shall not remove the same from the Site without the Project Manager's consent that such Contractor's Equipment is no longer required for the execution of the Contract.

22.3.2 Unless otherwise specified in the Contract, upon completion of the Facilities, the Contractor shall remove from the Site all Equipment brought by the Contractor onto the Site and any surplus materials remaining thereon.

22.3.3 The Employer will, if requested, use its best endeavors to assist the Contractor in obtaining any local, state or national government permission required by the Contractor for the export of the Contractor's Equipment imported by the Contractor for use in the execution of the Contract that is no longer required for the execution of the Contract.

**22.4 Site Regulations and Safety**

The Employer and the Contractor shall establish Site regulations setting out the rules to be observed in the execution of the Contract at the Site and shall comply therewith. The Contractor shall prepare and submit to the Employer, with a copy to the Project Manager, proposed Site regulations for the Employer's approval, which approval shall not be unreasonably withheld.

Such Site regulations shall include, but shall not be limited to, rules in respect of security, safety of the Facilities, gate control, sanitation,



medical care, and fire prevention.

## 22.5 Opportunities for Other Contractors

- 22.5.1 The Contractor shall, upon written request from the Employer or the Project Manager, give all reasonable opportunities for carrying out the work to any other contractors employed by the Employer on or near the Site.
- 22.5.2 If the Contractor, upon written request from the Employer or the Project Manager, makes available to other contractors any roads or ways the maintenance for which the Contractor is responsible, permits the use by such other contractors of the Contractor's Equipment, or provides any other service of whatsoever nature for such other contractors, the Employer shall fully compensate the Contractor for any loss or damage caused or occasioned by such other contractors in respect of any such use or service, and shall pay to the Contractor reasonable remuneration for the use of such equipment or the provision of such services.
- 22.5.3 The Contractor shall also so arrange to perform its work as to minimize, to the extent possible, interference with the work of other contractors. The Project Manager shall determine the resolution of any difference or conflict that may arise between the Contractor and other contractors and the workers of the Employer in regard to their work.
- 22.5.4 The Contractor shall notify the Project Manager promptly of any defects in the other Contractors' work that come to its notice, and that could affect the Contractor's work. The Project Manager shall determine the corrective measures, if any, required to rectify the situation after inspection of the Facilities. Decisions made by the Project Manager shall be binding on the Contractor.

## 22.6 Emergency Work

If, by reason of an emergency arising in connection with and during the execution of the Contract, any protective or remedial work is necessary as a matter of urgency to prevent damage to the Facilities, the Contractor shall immediately carry out such work.

If the Contractor is unable or unwilling to do such work immediately, the Employer may do or cause such work to be done as the Employer may determine is necessary in order to prevent damage to the Facilities. In such event the Employer shall, as soon as practicable after the occurrence of any such emergency, notify the Contractor in writing of such emergency, the work done and the reasons therefor. If the work done or caused to be done by the Employer is work that the Contractor was liable to do at its own expense under the Contract, the reasonable costs incurred by the Employer in connection therewith shall be paid by the Contractor to the Employer. Otherwise, the cost of such remedial work shall be borne by the Employer.

## 22.7 Site Clearance

### 22.7.1 Site Clearance in Course of Performance

In the course of carrying out the Contract, the Contractor shall





keep the Site reasonably free from all unnecessary obstruction, store, or remove any surplus materials, clear away any wreckage, rubbish, or temporary works from the Site, and remove any Contractor's Equipment no longer required for execution of the Contract.

**22.7.2 Clearance of Site after Completion**

After Completion of all parts of the Facilities, the Contractor shall clear away and remove all wreckage, rubbish, and debris of any kind from the Site, and shall leave the Site and Facilities in a clean and safe condition.

**22.8 Watching and Lighting**

The Contractor shall provide and maintain at its own expense all lighting, fencing, and watching when and where necessary for the proper execution and the protection of the Facilities, or for the safety of the owners and occupiers of adjacent property and for the safety of the public.

**23. Test and Inspection**

23.1 The Contractor shall at its own expense carry out at the place of manufacture and/or on the Site all such tests and/or inspections of the Plant and any part of the Facilities as are specified in the Contract.

23.2 The Employer and the Project Manager or their designated representatives shall be entitled to attend the aforesaid test and/or inspection, provided that the Employer shall bear all costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.

23.3 Whenever the Contractor is ready to carry out any such test and/or inspection, the Contractor shall give a reasonable advance notice of such test and/or inspection and of the place and time thereof to the Project Manager. The Contractor shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Employer and the Project Manager or their designated representatives to attend the test and/or inspection.

23.4 The Contractor shall provide the Project Manager with a certified report of the results of any such test and/or inspection.

If the Employer or Project Manager or their designated representatives fails to attend the test and/or inspection, or if it is agreed between the parties that such persons shall not do so, then the Contractor may proceed with the test and/or inspection in the absence of such persons, and may provide the Project Manager with a certified report of the results thereof.

23.5 The Project Manager may require the Contractor to carry out any test and/or inspection not required by the Contract, provided that the Contractor's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impedes the progress of work on the Facilities and/or the Contractor's performance of its other obligations under the Contract, due allowance will be made in respect of the Time for Completion and the other obligations so affected.

23.6 If any Plant or any part of the Facilities fails to pass any test and/or inspection, the Contractor shall either rectify or replace such Plant or



part of the Facilities and shall repeat the test and/or inspection upon giving a notice under GCC Subclause 23.3.

- 23.7 If any dispute or difference of opinion shall arise between the parties in connection with or arising out of the test and/or inspection of the Plant or part of the Facilities that cannot be settled between the parties within a reasonable period of time, it may be referred to an Dispute Board for determination in accordance with GCC Subclause 45.3.
- 23.8 The Contractor shall afford the Employer and the Project Manager, at the Employer's expense, access at any reasonable time to any place where the Plant are being manufactured or the Facilities are being installed, in order to inspect the progress and the manner of manufacture or installation, provided that the Project Manager shall give the Contractor a reasonable prior notice.
- 23.9 The Contractor agrees that neither the execution of a test and/or inspection of Plant or any part of the Facilities, nor the attendance by the Employer or the Project Manager, nor the issue of any test certificate pursuant to GCC Subclause 23.4, shall release the Contractor from any other responsibilities under the Contract.
- 23.10 No part of the Facilities or foundations shall be covered up on the Site without the Contractor carrying out any test and/or inspection required under the Contract. The Contractor shall give a reasonable notice to the Project Manager whenever any such parts of the Facilities or foundations are ready or about to be ready for test and/or inspection; such test and/or inspection and notice thereof shall be subject to the requirements of the Contract.
- 23.11 The Contractor shall uncover any part of the Facilities or foundations, or shall make openings in or through the same as the Project Manager may from time to time require at the Site, and shall reinstate and make good such part or parts.

If any parts of the Facilities or foundations have been covered up at the Site after compliance with the requirement of GCC Subclause 23.10 and are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating, and making good the same shall be borne by the Employer, and the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been delayed or impeded in the performance of any of its obligations under the Contract.

#### **24. Completion of the Facilities**

- 24.1 As soon as the Facilities or any part thereof has, in the opinion of the Contractor, been completed operationally and structurally and put in a tight and clean condition as specified in the Employer's Requirements, excluding minor items not materially affecting the operation or safety of the Facilities, the Contractor shall so notify the Employer in writing.
- 24.2 Within 7 days after receipt of the notice from the Contractor under GCC Subclause 24.1, the Employer shall supply the operating and maintenance personnel specified in the Appendix (Scope of Works and Supply by the Employer) to the Contract Agreement for Pre-commissioning of the Facilities or any part thereof.

Pursuant to the Appendix (Scope of Works and Supply by the Employer) to the Contract Agreement, the Employer shall also provide, within the said 7-day period, the raw materials, utilities, lubricants,





chemicals, catalysts, facilities, services, and other matters required for Pre-commissioning of the Facilities or any part thereof.

- 24.3 As soon as reasonably practicable after the operating and maintenance personnel have been supplied by the Employer and the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services, and other matters have been provided by the Employer in accordance with GCC Subclause 24.2, the Contractor shall commence Pre-commissioning of the Facilities or the relevant part thereof in preparation for Commissioning, subject to GCC Subclause 25.5.
- 24.4 As soon as all works in respect of Pre-commissioning are completed and, in the opinion of the Contractor, the Facilities or any part thereof is ready for Commissioning, the Contractor shall so notify the Project Manager in writing.
- 24.5 The Project Manager shall, within 14 days after receipt of the Contractor's notice under GCC Subclause 24.4, either issue a Completion Certificate in the form specified in the Employer's Requirements (Forms and Procedures), stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's notice under GCC Subclause 24.4, or notify the Contractor in writing of any defects and/or deficiencies.

If the Project Manager notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies, and shall repeat the procedure described in GCC Subclause 24.4.

If the Project Manager is satisfied that the Facilities or that part thereof have reached Completion, the Project Manager shall, within 7 days after receipt of the Contractor's repeated notice, issue a Completion Certificate stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's repeated notice.

If the Project Manager is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within 7 days after receipt of the Contractor's repeated notice, and the above procedure shall be repeated.

- 24.6 If the Project Manager fails to issue the Completion Certificate and fails to inform the Contractor of any defects and/or deficiencies within 14 days after receipt of the Contractor's notice under GCC Subclause 24.4 or within 7 days after receipt of the Contractor's repeated notice under GCC Subclause 24.5, or if the Employer makes use of the Facilities or part thereof, then the Facilities or that part thereof shall be deemed to have reached Completion as of the date of the Contractor's notice or repeated notice, or as of the Employer's use of the Facilities, as the case may be.
- 24.7 As soon as possible after Completion, the Contractor shall complete all outstanding minor items so that the Facilities are fully in accordance with the requirements of the Contract, failing which the Employer will undertake such completion and deduct the costs thereof from any monies owing to the Contractor.
- 24.8 Upon Completion, the Employer shall be responsible for the care and custody of the Facilities or the relevant part thereof, together with the risk of loss or damage thereto, and shall thereafter take over the



Facilities or the relevant part thereof.

**25. Commissioning  
and Operational  
Acceptance**

**25.1 Commissioning**

25.1.1 Commissioning of the Facilities or any part thereof shall be commenced by the Contractor immediately after issue of the Completion Certificate by the Project Manager, pursuant to GCC Subclause 24.5, or immediately after the date of the deemed Completion, under GCC Subclause 24.6.

25.1.2 The Employer shall supply the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts, facilities, services, and other matters required for Commissioning.

25.1.3 In accordance with the requirements of the Contract, the Contractor's and Project Manager's advisory personnel shall attend the Commissioning, including the Guarantee Test, and shall advise and assist the Employer.

**25.2 Guarantee Test**

25.2.1 Subject to GCC Subclause 25.5, the Guarantee Test and repeats thereof shall be conducted by the Contractor during Commissioning of the Facilities or the relevant part thereof to ascertain whether the Facilities or the relevant part can attain the Functional Guarantees specified in the Appendix (Functional Guarantees) to the Contract Agreement. The Employer shall promptly provide the Contractor with such information as the Contractor may reasonably require in relation to the conduct and results of the Guarantee Test and any repeats thereof.

25.2.2 If for reasons not attributable to the Contractor, the Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within the period from the date of Completion specified in the SCC or any other period agreed upon by the Employer and the Contractor, the Contractor shall be deemed to have fulfilled its obligations with respect to the Functional Guarantees, and GCC Subclauses 28.2 and 28.3 shall not apply.

**25.3 Operational Acceptance**

25.3.1 Subject to GCC Subclause 25.4 below, Operational Acceptance shall occur in respect of the Facilities or any part thereof when

- (a) the Guarantee Test has been successfully completed and the Functional Guarantees are met; or
- (b) the Guarantee Test has not been successfully completed or has not been carried out for reasons not attributable to the Contractor within the period from the date of Completion specified in the SCC, or any other agreed upon period as specified in GCC Subclause 25.2.2 above; or
- (c) the Contractor has paid the liquidated damages specified in GCC Subclause 28.3 hereof; and
- (d) any minor items mentioned in GCC Subclause 24.7 hereof relevant to the Facilities or that part thereof have been completed.



25.3.2 At any time after any of the events set out in GCC Subclause 25.3.1 have occurred, the Contractor may give a notice to the Project Manager requesting the issue of an Operational Acceptance Certificate in the form provided in the Employer's Requirements (Forms and Procedures) in respect of the Facilities or the part thereof specified in such notice as of the date of such notice.

25.3.3 The Project Manager shall, after consultation with the Employer, and within 7 days after receipt of the Contractor's notice, issue an Operational Acceptance Certificate.

25.3.4 If within 7 days after receipt of the Contractor's notice, the Project Manager fails to issue the Operational Acceptance Certificate or fails to inform the Contractor in writing of the justifiable reasons why the Project Manager has not issued the Operational Acceptance Certificate, the Facilities or the relevant part thereof shall be deemed to have been accepted as of the date of the Contractor's said notice.

#### 25.4 Partial Acceptance

25.4.1 If the Contract specifies that Completion and Commissioning shall be carried out in respect of parts of the Facilities, the provisions relating to Completion and Commissioning including the Guarantee Test shall apply to each such part of the Facilities individually, and the Operational Acceptance Certificate shall be issued accordingly for each such part of the Facilities.

25.4.2 If a part of the Facilities comprises facilities such as buildings, for which no Commissioning or Guarantee Test is required, then the Project Manager shall issue the Operational Acceptance Certificate for such facility when it attains Completion, provided that the Contractor shall thereafter complete any outstanding minor items that are listed in the Operational Acceptance Certificate.

#### 25.5 Delayed Pre-Commissioning and/or Guarantee Test

25.5.1 In the event that the Contractor is unable to proceed with the Pre-commissioning of the Facilities pursuant to Subclause 24.3, or with the Guarantee Test pursuant to Subclause 25.2, for reasons attributable to the Employer either on account of non availability of other facilities under the responsibilities of other contractor(s), or for reasons beyond the Employer's control, the provisions leading to "deemed" completion of activities such as Completion, pursuant to GCC Subclause 24.6, and Operational Acceptance, pursuant to GCC Subclause 25.3.4, and Contractor's obligations regarding Defect Liability Period, pursuant to GCC Subclause 27.2, Functional Guarantee, pursuant to GCC Clause 28, and Care of Facilities, pursuant to GCC Clause 32, and GCC Clause 41.1, Suspension, shall not apply. In this case, the following provisions shall apply.

25.5.2 When the Contractor is notified by the Project Manager that he will be unable to proceed with the activities and obligations pursuant to above Subclause 25.5.1, the Contractor shall be entitled to the following:



- (a) the Time of Completion shall be extended for the period of suspension without imposition of liquidated damages pursuant to GCC Subclause 26.2;
- (b) payments due to the Contractor in accordance with the provision specified in the Appendix (Terms and Procedures of Payment) to the Contract Agreement, which would not have been payable in normal circumstances due to noncompletion of the subject activities, shall be released to the Contractor against submission of a security in the form of a bank guarantee of equivalent amount acceptable to the Employer, and which shall become null and void when the Contractor will have complied with its obligations regarding those payments, subject to the provision of Subclause 25.5.3 below;
- (c) the expenses towards the above security and extension of other securities under the contract, of which validity needs to be extended, shall be reimbursed to the Contractor by the Employer;
- (d) the additional charges towards the care of the Facilities pursuant to GCC Subclause 32.1 shall be reimbursed to the Contractor by the Employer for the period between the notification mentioned above and the notification mentioned in Subclause 25.5.4 below. The provision of GCC Subclause 33.2 shall apply to the Facilities during the same period.

25.5.3 In the event that the period of suspension under above Subclause 25.5.1 actually exceeds 180 days, the Employer and Contractor shall mutually agree to any additional compensation payable to the Contractor.

25.5.4 When the Contractor is notified by the Project Manager that the plant is ready for Pre-commissioning, the Contractor shall proceed without delay in performing all the specified activities and obligations under the contract.

## F. Guarantees and Liabilities

### 26. Completion Time Guarantee

- 26.1 The Contractor guarantees that it shall attain Completion of the Facilities (or a part for which a separate time for completion is specified) within the Time for Completion specified in the SCC pursuant to GCC Subclause 8.2, or within such extended time to which the Contractor shall be entitled under GCC Clause 40 hereof.
- 26.2 If the Contractor fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension thereof under GCC Clause 40, the Contractor shall pay to the Employer liquidated damages in the amount specified in the SCC as a percentage rate of the Contract Price or the relevant part thereof. The aggregate amount of such liquidated damages shall in no event exceed the amount specified as "Maximum" in the SCC as a percentage rate of the



Contract Price. Once the "Maximum" is reached, the Employer may consider termination of the Contract, pursuant to GCC Subclause 42.2.2.

Such payment shall completely satisfy the Contractor's obligation to attain Completion of the Facilities or the relevant part thereof within the Time for Completion or any extension thereof under GCC Clause 40. The Contractor shall have no further liability whatsoever to the Employer in respect thereof.

However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the Facilities or from any other obligations and liabilities of the Contractor under the Contract.

Save for liquidated damages payable under this GCC Subclause 26.2, the failure by the Contractor to attain any milestone or other act, matter or thing by any date specified in the Appendix (Time Schedule) to the Contract Agreement and/or other program of work prepared pursuant to GCC Subclause 18.2 shall not render the Contractor liable for any loss or damage thereby suffered by the Employer.

- 26.3 If the Contractor attains Completion of the Facilities or any part thereof before the Time for Completion or any extension thereof under GCC Clause 40, the Employer shall pay to the Contractor a bonus in the amount specified in the SCC. The aggregate amount of such bonus shall in no event exceed the amount specified as "Maximum" in the SCC.

## 27. Defect Liability

- 27.1 The Contractor warrants that the Facilities or any part thereof shall be free from defects in the design, engineering, materials, and workmanship of the Plant supplied and of the work executed.
- 27.2 The Defect Liability Period shall be 540 days from the date of Completion of the Facilities (or any part thereof) or 1 year from the date of Operational Acceptance of the Facilities (or any part thereof), whichever first occurs, unless specified otherwise in the SCC pursuant to GCC Subclause 27.10.

If during the Defect Liability Period any defect should be found in the design, engineering, materials, and workmanship of the Plant supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace, or otherwise make good as the Contractor shall determine at its discretion, such defect as well as any damage to the Facilities caused by such defect. The Contractor shall not be responsible for the repair, replacement, or making good of any defect or of any damage to the Facilities arising out of or resulting from any of the following causes:

- (a) improper operation or maintenance of the Facilities by the Employer,
- (b) operation of the Facilities outside specifications provided in the Contract, or
- (c) normal wear and tear.

- 27.3 The Contractor's obligations under this GCC Clause 27 shall not apply to:



- (a) any materials that are supplied by the Employer under GCC Subclause 21.2, are normally consumed in operation, or have a normal life shorter than the Defect Liability Period stated herein;
- (b) any designs, specifications or other data designed, supplied, or specified by or on behalf of the Employer or any matters for which the Contractor has disclaimed responsibility herein; or
- (c) any other materials supplied or any other work executed by or on behalf of the Employer, except for the work executed by the Employer under GCC Subclause 27.7.

27.4 The Employer shall give the Contractor a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. The Employer shall afford all reasonable opportunity for the Contractor to inspect any such defect.

27.5 The Employer shall afford the Contractor all necessary access to the Facilities and the Site to enable the Contractor to perform its obligations under this GCC Clause 27.

The Contractor may, with the consent of the Employer, remove from the Site any Plant or any part of the Facilities that are defective if the nature of the defect, and/or any damage to the Facilities caused by the defect, is such that repairs cannot be expeditiously carried out at the Site.

27.6 If the repair, replacement or making good is of such a character that it may affect the efficiency of the Facilities or any part thereof, the Employer may give to the Contractor a notice requiring that tests of the defective part of the Facilities shall be made by the Contractor immediately upon completion of such remedial work, whereupon the Contractor shall carry out such tests.

If such part fails the tests, the Contractor shall carry out further repair, replacement or making good, as the case may be, until that part of the Facilities passes such tests. The tests shall be agreed upon by the Employer and the Contractor.

27.7 If the Contractor fails to commence the work necessary to remedy such defect or any damage to the Facilities caused by such defect within a reasonable time (which shall in no event be considered to be less than 15 days), the Employer may, following notice to the Contractor, proceed to do such work, and the reasonable costs incurred by the Employer in connection therewith shall be paid to the Employer by the Contractor or may be deducted by the Employer from any monies due the Contractor or claimed under the Performance Security.

27.8 If the Facilities or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the Facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by the Employer because of any of the aforesaid reasons.

27.9 Except as provided in GCC Clauses 27 and 33, the Contractor shall be under no liability whatsoever and howsoever arising, and whether under the Contract or at law, in respect of defects in the Facilities or





any part thereof, the Plant, design, or engineering, or work executed that appear after Completion of the Facilities or any part thereof, except where such defects are the result of the gross negligence, fraud, criminal, or willful action of the Contractor.

27.10 In addition, any such component of the Facilities and during the period of time as may be specified in the SCC shall be subject to an extended Defect Liability Period. Such obligation of the Contractor shall be in addition to the Defect Liability Period specified under GCC Subclause 27.2.

## 28. Functional Guarantees

28.1 The Contractor guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified in the Appendix (Functional Guarantees) to the Contract Agreement, subject to, and upon the conditions therein specified.

28.2 If, for reasons attributable to the Contractor, the minimum level of the Functional Guarantees specified in the Appendix (Functional Guarantees) to the Contract Agreement are not met either in whole or in part, the Contractor shall at its cost and expense make such changes, modifications, and/or additions to the Plant or any part thereof as may be necessary to meet at least the minimum level of such Guarantees. The Contractor shall notify the Employer upon completion of the necessary changes, modifications, and/or additions, and shall request the Employer to repeat the Guarantee Test until the minimum level of the Guarantees has been met. If the Contractor eventually fails to meet the minimum level of Functional Guarantees, the Employer may consider termination of the Contract, pursuant to GCC Subclause 42.2.2.

28.3 If, for reasons attributable to the Contractor, the Functional Guarantees specified in the Appendix (Functional Guarantees) to the Contract Agreement are not attained either in whole or in part, but the minimum level of the Functional Guarantees specified in the said Appendix to the Contract Agreement is met, the Contractor shall, at the Contractor's option, either

- (a) make such changes, modifications, and/or additions to the Facilities or any part thereof that are necessary to attain the Functional Guarantees at its cost and expense, and shall request the Employer to repeat the Guarantee Test or
- (b) pay liquidated damages to the Employer in respect of the failure to meet the Functional Guarantees in accordance with the provisions in the Appendix (Functional Guarantees) to the Contract Agreement.

28.4 The payment of liquidated damages under GCC Subclause 28.3, up to the limitation of liability specified in the Appendix (Functional Guarantees) to the Contract Agreement, shall completely satisfy the Contractor's guarantees under GCC Subclause 28.3, and the Contractor shall have no further liability whatsoever to the Employer in respect thereof. Upon the payment of such liquidated damages by the Contractor, the Project Manager shall issue the Operational Acceptance Certificate for the Facilities or any part thereof in respect of which the liquidated damages have been so paid.

## 29. Patent

29.1 The Contractor shall, subject to the Employer's compliance with GCC



## Indemnity

Subclause 29.2, indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions, or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Employer may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract by reason of (a) the installation of the Facilities by the Contractor or the use of the Facilities in the country where the Site is located, and (b) the sale of the products produced by the Facilities in any country.

Such indemnity shall not cover any use of the Facilities or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, any infringement resulting from the use of the Facilities or any part thereof, or any products produced thereby in association or combination with any other equipment, plant, or materials not supplied by the Contractor, pursuant to the Contract Agreement.

- 29.2 If any proceedings are brought or any claim is made against the Employer arising out of the matters referred to in GCC Subclause 29.1, the Employer shall promptly give the Contractor a notice thereof, and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Contractor fails to notify the Employer within 30 days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the 30-day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

- 29.3 The Employer shall indemnify and hold harmless the Contractor and its employees, officers, and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Contractor may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Employer.

## 30. Limitation of Liability

- 30.1 Except in cases of criminal negligence or willful misconduct,
- (a) the Contractor shall not be liable to the Employer, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Contractor to pay liquidated damages to the





Employer, and

- (b) the aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed a multiple of the Contract Price specified in the SCC or, if a multiple is not so specified, the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Contractor to indemnify the Employer with respect to patent infringement.

## G. Risk Distribution

### 31. Transfer of Ownership

- 31.1 Ownership of the Plant (including spare parts) to be imported into the country where the Site is located shall be transferred to the Employer upon loading on to the mode of transport to be used to convey the Plant from the country of origin to that country.
- 31.2 Ownership of the Plant (including spare parts) procured in the country where the Site is located shall be transferred to the Employer when the Plant are brought on to the Site.
- 31.3 Ownership of the Contractor's Equipment used by the Contractor and its Subcontractors in connection with the Contract shall remain with the Contractor or its Subcontractors.
- 31.4 Ownership of any Plant in excess of the requirements for the Facilities shall revert to the Contractor upon Completion of the Facilities or at such earlier time when the Employer and the Contractor agree that the Plant in question are no longer required for the Facilities.
- 31.5 Notwithstanding the transfer of ownership of the Plant, the responsibility for care and custody thereof together with the risk of loss or damage thereto shall remain with the Contractor pursuant to GCC Clause 32 (Care of Facilities) hereof until Completion of the Facilities or the part thereof in which such Plant are incorporated.

### 32. Care of Facilities

- 32.1 The Contractor shall be responsible for the care and custody of the Facilities or any part thereof until the date of Completion of the Facilities pursuant to GCC Clause 24 or, where the Contract provides for Completion of the Facilities in parts, until the date of Completion of the relevant part, and shall make good at its own cost any loss or damage that may occur to the Facilities or the relevant part thereof from any cause whatsoever during such period. The Contractor shall also be responsible for any loss or damage to the Facilities caused by the Contractor or its Subcontractors in the course of any work carried out, pursuant to GCC Clause 27. Notwithstanding the foregoing, the Contractor shall not be liable for any loss or damage to the Facilities or that part thereof caused by reason of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Subclauses 32.2 and 38.1.
- 32.2 If any loss or damage occurs to the Facilities or any part thereof or to the Contractor's temporary facilities by reason of
  - (a) insofar as they relate to the country where the Site is located, nuclear reaction, nuclear radiation, radioactive contamination,



pressure wave caused by aircraft or other aerial objects, or any other occurrences that an experienced contractor could not reasonably foresee, or if reasonably foreseeable could not reasonably make provision for or insure against, insofar as such risks are not normally insurable on the insurance market and are mentioned in the general exclusions of the policy of insurance, including War Risks and Political Risks, taken out under GCC Clause 34 hereof; or

- (b) any use or occupation by the Employer or any third party other than a Subcontractor, authorized by the Employer of any part of the Facilities; or
- (c) any use of or reliance upon any design, data, or specification provided or designated by or on behalf of the Employer, or any such matter for which the Contractor has disclaimed responsibility herein,

the Employer shall pay to the Contractor all sums payable in respect of the Facilities executed, notwithstanding that the same be lost, destroyed, or damaged, and will pay to the Contractor the replacement value of all temporary facilities and all parts thereof lost, destroyed, or damaged. If the Employer requests the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Contractor shall make good the same at the cost of the Employer in accordance with GCC Clause 39. If the Employer does not request the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Employer shall either request a change in accordance with GCC Clause 39, excluding the performance of that part of the Facilities thereby lost, destroyed or damaged, or, where the loss or damage affects a substantial part of the Facilities, the Employer shall terminate the Contract pursuant to GCC Subclause 42.1 hereof.

- 32.3 The Contractor shall be liable for any loss of or damage to any Contractor's Equipment, or any other property of the Contractor used or intended to be used for purposes of the Facilities, except (i) as mentioned in GCC Subclause 32.2 with respect to the Contractor's temporary facilities, and (ii) where such loss or damage arises by reason of any of the matters specified in GCC Subclauses 32.2 (b) and (c) and 38.1.
- 32.4 With respect to any loss or damage caused to the Facilities or any part thereof or to the Contractor's Equipment by reason of any of the matters specified in GCC Subclause 38.1, the provisions of GCC Subclause 38.3 shall apply.

**33. Loss of or  
Damage to  
Property;  
Accident or Injury  
to Workers;  
Indemnification**

- 33.1 Subject to GCC Subclause 33.3, the Contractor shall indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions, or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property other than the Facilities whether accepted or not, arising in connection with the supply and installation of the Facilities and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers, or agents, except any injury, death, or property damage caused by the negligence of the Employer, its



contractors, employees, officers, or agents.

- 33.2 If any proceedings are brought or any claim is made against the Employer that might subject the Contractor to liability under GCC Subclause 33.1, the Employer shall promptly give the Contractor a notice thereof and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Contractor fails to notify the Employer within 30 days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the 30-day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

- 33.3 The Employer shall indemnify and hold harmless the Contractor and its employees, officers, and Subcontractors from any liability for loss of or damage to property of the Employer, other than the Facilities not yet taken over, that is caused by fire, explosion, or any other perils, in excess of the amount recoverable from insurances procured under GCC Clause 34, provided that such fire, explosion, or other perils were not caused by any act or failure of the Contractor.
- 33.4 The party entitled to the benefit of an indemnity under this GCC Clause 33 shall take all reasonable measures to mitigate any loss or damage which has occurred. If the party fails to take such measures, the other party's liabilities shall be correspondingly reduced.

#### 34. Insurance

- 34.1 To the extent specified in the Appendix (Insurance Requirements) to the Contract Agreement, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified in the said Appendix. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, who should not unreasonably withhold such approval.

(a) Cargo Insurance During Transport

Covering loss or damage occurring while in transit from the Contractor's or Subcontractor's works or stores until arrival at the Site, to the Plant (including spare parts therefor) and to the Contractor's Equipment.

(b) Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to Completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the Defect Liability Period while the Contractor is on the Site for the purpose of performing its obligations during the Defect Liability Period.

(c) Third Party Liability Insurance



Covering bodily injury or death suffered by third parties including the Employer's personnel, and loss of or damage to property occurring in connection with the supply and installation of the Facilities.

(d) Automobile Liability Insurance

Covering use of all vehicles used by the Contractor or its Subcontractors, whether or not owned by them, in connection with the execution of the Contract.

(e) Workers' Compensation

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(f) Employer's Liability

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(g) Other Insurances

Such other insurances as may be specifically agreed upon by the parties hereto as listed in the Appendix (Insurance Requirements) to the Contract Agreement.

34.2 The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Subclause 34.1, except for the Third Party Liability, Workers' Compensation, and Employer's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GCC Subclause 34.1 except for the Cargo Insurance During Transport, Workers' Compensation, and Employer's Liability Insurances. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.

34.3 The Contractor shall, in accordance with the provisions of the Appendix (Insurance Requirements) to the Contract Agreement, deliver to the Employer certificates of insurance or copies of the insurance policies as evidence that the required policies are in full force and effect. The certificates shall provide that no less than 21 days' notice shall be given to the Employer by insurers prior to cancellation or material modification of a policy.

34.4 The Contractor shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Contractor.

34.5 The Employer shall at its expense take out and maintain in effect during the performance of the Contract those insurances specified in the Appendix (Insurance Requirements) to the Contract Agreement, in the sums and with the deductibles and other conditions specified in the said Appendix. The Contractor and the Contractor's Subcontractors shall be named as co-insureds under all such policies. All insurers' rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies. The Employer shall deliver to the Contractor satisfactory



evidence that the required insurances are in full force and effect. The policies shall provide that not less than 21 days' notice shall be given to the Contractor by all insurers prior to any cancellation or material modification of the policies. If so requested by the Contractor, the Employer shall provide copies of the policies taken out by the Employer under this GCC Subclause 34.5.

34.6 If the Contractor fails to take out and/or maintain in effect the insurances referred to in GCC Subclause 34.1, the Employer may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Contractor under the Contract any premium that the Employer shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Contractor. If the Employer fails to take out and/or maintain in effect the insurances referred to in GCC 34.5, the Contractor may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Employer under the Contract any premium that the Contractor shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Employer. If the Contractor fails to or is unable to take out and maintain in effect any such insurances, the Contractor shall nevertheless have no liability or responsibility towards the Employer, and the Contractor shall have full recourse against the Employer for any and all liabilities of the Employer herein.

34.7 Unless otherwise provided in the Contract, the Contractor shall prepare and conduct all and any claims made under the policies effected by it pursuant to this GCC Clause 34, and all monies payable by any insurers shall be paid to the Contractor. The Employer shall give to the Contractor all such reasonable assistance as may be required by the Contractor. With respect to insurance claims in which the Employer's interest is involved, the Contractor shall not give any release or make any compromise with the insurer without the prior written consent of the Employer. With respect to insurance claims in which the Contractor's interest is involved, the Employer shall not give any release or make any compromise with the insurer without the prior written consent of the Contractor.

### 35. Unforeseen Conditions

35.1 If, during the execution of the Contract, the Contractor shall encounter on the Site any physical conditions other than climatic conditions, or artificial obstructions that could not have been reasonably foreseen prior to the date of the Contract Agreement by an experienced contractor on the basis of reasonable examination of the data relating to the Facilities including any data as to boring tests, provided by the Employer, and on the basis of information that it could have obtained from a visual inspection of the Site if access thereto was available, or other data readily available to it relating to the Facilities, and if the Contractor determines that it will in consequence of such conditions or obstructions incur additional cost and expense or require additional time to perform its obligations under the Contract that would not have been required if such physical conditions or artificial obstructions had not been encountered, the Contractor shall promptly, and before performing additional work or using additional Plant or Contractor's Equipment, notify the Project Manager in writing of

- (a) the physical conditions or artificial obstructions on the Site that could not have been reasonably foreseen;





- (b) the additional work and/or Plant and/or Contractor's Equipment required, including the steps which the Contractor will or proposes to take to overcome such conditions or obstructions;
- (c) the extent of the anticipated delay; and
- (d) the additional cost and expense that the Contractor is likely to incur.

On receiving any notice from the Contractor under this GCC Subclause 35.1, the Project Manager shall promptly consult with the Employer and Contractor and decide upon the actions to be taken to overcome the physical conditions or artificial obstructions encountered. Following such consultations, the Project Manager shall instruct the Contractor, with a copy to the Employer, of the actions to be taken.

35.2 Any reasonable additional cost and expense incurred by the Contractor in following the instructions from the Project Manager to overcome such physical conditions or artificial obstructions referred to in GCC Subclause 35.1 shall be paid by the Employer to the Contractor as an addition to the Contract Price.

35.3 If the Contractor is delayed or impeded in the performance of the Contract because of any such physical conditions or artificial obstructions referred to in GCC Subclause 35.1, the Time for Completion shall be extended in accordance with GCC Clause 40.

### 36. Change in Laws and Regulations

36.1 If, after the date 30 days prior to the date of Bid submission, in the country where the Site is located, any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated, or changed, which shall be deemed to include any change in interpretation or application by the competent authorities, that subsequently affects the costs and expenses of the Contractor and/or the Time for Completion, the Contract Price shall be correspondingly increased or decreased, and/or the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been affected in the performance of any of its obligations under the Contract. Notwithstanding the foregoing, such additional or reduced costs shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with the SCC, pursuant to GCC Subclause 11.2.

### 37. Force Majeure

37.1 "Force Majeure" shall mean any event beyond the reasonable control of the Employer or of the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the party affected, and shall include, without limitation, the following:

- (a) war, hostilities, or warlike operations whether a state of war be declared or not, invasion, act of foreign enemy and civil war;
- (b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion, and terrorist acts;
- (c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority;
- (d) strike, sabotage, lockout, embargo, import restriction, port



- congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine, and plague;
- (e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear, and pressure waves or other natural or physical disaster; and
  - (f) shortage of labor, materials, or utilities where caused by circumstances that are themselves Force Majeure.
- 37.2 If either party is prevented, hindered, or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within 14 days after the occurrence of such event.
- 37.3 The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance is prevented, hindered, or delayed. The Time for Completion shall be extended in accordance with GCC Clause 40.
- 37.4 The party or parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either party's right to terminate the Contract under GCC Subclauses 37.6 and 38.5.
- 37.5 No delay or nonperformance by either party hereto caused by the occurrence of any event of Force Majeure shall
- (a) constitute a default or breach of the Contract; or
  - (b) give rise to any claim for damages or additional cost or expense occasioned thereby, subject to GCC Subclauses 32.2, 38.3 and 38.4
- if and to the extent that such delay or nonperformance is caused by the occurrence of an event of Force Majeure.
- 37.6 If the performance of the Contract is substantially prevented, hindered, or delayed for a single period of more than 60 days or an aggregate period of more than 120 days on account of one or more events of Force Majeure during the currency of the Contract, the parties will attempt to develop a mutually satisfactory solution, failing which either party may terminate the Contract by giving a notice to the other, but without prejudice to either party's right to terminate the Contract under GCC Subclause 38.5.
- 37.7 In the event of termination pursuant to GCC Subclause 37.6, the rights and obligations of the Employer and the Contractor shall be as specified in GCC Subclauses 42.1.2 and 42.1.3.
- 37.8 Notwithstanding GCC Subclause 37.5, Force Majeure shall not apply to any obligation of the Employer to make payments to the Contractor herein.

### 38. War Risks

- 38.1 "War Risks" shall mean any event specified in paragraphs (a) and (b)



of GCC Subclause 37.1 and any explosion or impact of any mine, bomb, shell, grenade, or other projectile, missile, munitions or explosive of war, occurring or existing in or near the country (or countries) where the Site is located.

38.2 Notwithstanding anything contained in the Contract, the Contractor shall have no liability whatsoever for or with respect to

- (a) destruction of or damage to Facilities, Plant, or any part thereof;
- (b) destruction of or damage to property of the Employer or any third party; or
- (c) injury or loss of life

if such destruction, damage, injury or loss of life is caused by any war risks, and the Employer shall indemnify and hold the Contractor harmless from and against any and all claims, liabilities, actions, lawsuits, damages, costs, charges, or expenses arising in consequence of or in connection with the same.

38.3 If the Facilities or any Plant or Contractor's Equipment or any other property of the Contractor used or intended to be used for the purposes of the Facilities shall sustain destruction or damage by reason of any war risks, the Employer shall pay the Contractor for

- (a) any part of the Facilities or the Plant so destroyed or damaged to the extent not already paid for by the Employer and so far as may be required by the Employer, and as may be necessary for completion of the Facilities;
- (b) replacing or making good any Contractor's Equipment or other property of the Contractor so destroyed or damaged; and
- (c) replacing or making good any such destruction or damage to the Facilities or the Plant or any part thereof.

If the Employer does not require the Contractor to replace or make good any such destruction or damage to the Facilities, the Employer shall either request a change in accordance with GCC Clause 39, excluding the performance of that part of the Facilities thereby destroyed or damaged or, where the loss, destruction, or damage affects a substantial part of the Facilities, shall terminate the Contract, pursuant to GCC Subclause 42.1.

If the Employer requires the Contractor to replace or make good on any such destruction or damage to the Facilities, the Time for Completion shall be extended in accordance with GCC 40.

38.4 Notwithstanding anything contained in the Contract, the Employer shall pay the Contractor for any increased costs or incidentals to the execution of the Contract that are in any way attributable to, consequent on, resulting from, or in any way connected with any war risks, provided that the Contractor shall as soon as practicable notify the Employer in writing of any such increased cost.

38.5 If during the performance of the Contract any war risks shall occur that financially or otherwise materially affect the execution of the Contract by the Contractor, the Contractor shall use its reasonable efforts to execute the Contract with due and proper consideration given to the safety of its and its Subcontractors' personnel engaged in the work on





the Facilities, provided, however, that if the execution of the work on the Facilities becomes impossible or is substantially prevented for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of any war risks, the parties will attempt to develop a mutually satisfactory solution, failing which either party may terminate the Contract by giving a notice to the other.

- 38.6 In the event of termination pursuant to GCC Subclauses 38.3 or 38.5, the rights and obligations of the Employer and the Contractor shall be specified in GCC Subclauses 42.1.2 and 42.1.3.

## H. Change in Contract Elements

### 39. Change in the Facilities

#### 39.1 Introducing a Change

39.1.1 Subject to GCC Subclauses 39.2.5 and 39.2.7, the Employer shall have the right to propose, and subsequently require, that the Project Manager order the Contractor from time to time during the performance of the Contract to make any change, modification, addition, or deletion to, in or from the Facilities hereinafter called "Change," provided that such Change falls within the general scope of the Facilities and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Facilities and the technical compatibility of the Change envisaged with the nature of the Facilities as specified in the Contract.

39.1.2 The Contractor may from time to time during its performance of the Contract propose to the Employer with a copy to the Project Manager, any Change that the Contractor considers necessary or desirable to improve the quality, efficiency, or safety of the Facilities. The Employer may at its discretion approve or reject any Change proposed by the Contractor, provided that the Employer shall approve any Change proposed by the Contractor to ensure the safety of the Facilities.

39.1.3 Notwithstanding GCC Subclauses 39.1.1 and 39.1.2, no change made necessary because of any default of the Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion.

39.1.4 The procedure on how to proceed with and execute Changes is specified in GCC Subclauses 39.2 and 39.3, and further details and forms are provided in the Employer's Requirements (Forms and Procedures).

#### 39.2 Changes Originating from Employer

39.2.1 If the Employer proposes a Change pursuant to GCC Subclause 39.1.1, it shall send to the Contractor a "Request for Change Proposal," requiring the Contractor to prepare and furnish to the Project Manager as soon as reasonably practicable a "Change Proposal," which shall include the following:

- (a) brief description of the Change,



- (b) effect on the Time for Completion,
- (c) estimated cost of the Change,
- (d) effect on Functional Guarantees (if any),
- (e) effect on the Facilities, and
- (f) effect on any other provisions of the Contract.

39.2.2 Prior to preparing and submitting the "Change Proposal," the Contractor shall submit to the Project Manager an "Estimate for Change Proposal," which shall be an estimate of the cost of preparing and submitting the Change Proposal.

Upon receipt of the Contractor's Estimate for Change Proposal, the Employer shall do one of the following:

- (a) accept the Contractor's estimate with instructions to the Contractor to proceed with the preparation of the Change Proposal,
- (b) advise the Contractor of any part of its Estimate for Change Proposal that is unacceptable and request the Contractor to review its estimate
- (c) advise the Contractor that the Employer does not intend to proceed with the Change.

39.2.3 Upon receipt of the Employer's instruction to proceed under GCC Subclause 39.2.2 (a), the Contractor shall, with proper expedition, proceed with the preparation of the Change Proposal, in accordance with GCC Subclause 39.2.1.

39.2.4 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If such rates and prices are inequitable, the parties thereto shall agree on specific rates for the valuation of the Change.

39.2.5 If before or during the preparation of the Change Proposal it becomes apparent that the aggregate effect of compliance therewith and with all other Change Orders that have already become binding upon the Contractor under this GCC Clause 39 would be to increase or decrease the Contract Price as originally set forth in Article 2 (Contract Price) of the Contract Agreement by more than 15%, the Contractor may give a written notice of objection thereto prior to furnishing the Change Proposal as aforesaid. If the Employer accepts the Contractor's objection, the Employer shall withdraw the proposed Change and shall notify the Contractor in writing thereof.

The Contractor's failure to so object shall neither affect its right to object to any subsequent requested Changes or Change Orders herein, nor affect its right to take into account, when making such subsequent objection, the percentage increase or decrease in the Contract Price that any Change not objected to by the Contractor represents.

39.2.6 Upon receipt of the Change Proposal, the Employer and the Contractor shall mutually agree upon all matters therein contained. Within 14 days after such agreement, the Employer



shall, if it intends to proceed with the Change, issue the Contractor with a Change Order.

If the Employer is unable to reach a decision within 14 days, it shall notify the Contractor with details of when the Contractor can expect a decision.

If the Employer decides not to proceed with the Change for whatever reason, it shall, within the said period of 14 days, notify the Contractor accordingly. Under such circumstances, the Contractor shall be entitled to reimbursement of all costs reasonably incurred by it in the preparation of the Change Proposal, provided that these do not exceed the amount given by the Contractor in its Estimate for Change Proposal submitted in accordance with GCC Subclause 39.2.2.

39.2.7 If the Employer and the Contractor cannot reach agreement on the price for the Change, an equitable adjustment to the Time for Completion, or any other matters identified in the Change Proposal, the Employer may nevertheless instruct the Contractor to proceed with the Change by issue of a "Pending Agreement Change Order."

Upon receipt of a Pending Agreement Change Order, the Contractor shall immediately proceed with effecting the Changes covered by such Order. The parties shall thereafter attempt to reach agreement on the outstanding issues under the Change Proposal.

If the parties cannot reach agreement within 60 days from the date of issue of the Pending Agreement Change Order, then the matter may be referred to the Dispute Board in accordance with the provisions of GCC Subclause 45.3.

### 39.3 Changes Originating from Contractor

39.3.1 If the Contractor proposes a Change pursuant to GCC Subclause 39.1.2, the Contractor shall submit to the Project Manager a written "Application for Change Proposal," giving reasons for the proposed Change and including the information specified in GCC Subclause 39.2.1.

Upon receipt of the Application for Change Proposal, the parties shall follow the procedures outlined in GCC Subclauses 39.2.6 and 39.2.7. However, should the Employer choose not to proceed, the Contractor shall not be entitled to recover the costs of preparing the Application for Change Proposal.

## 40. Extension of Time for Completion

40.1 The Time(s) for Completion specified in the SCC shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:

- (a) any Change in the Facilities as provided in GCC Clause 39;
- (b) any occurrence of Force Majeure as provided in GCC Clause 37, unforeseen conditions as provided in GCC Clause 35, or other occurrence of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Subclause 32.2;
- (c) any suspension order given by the Employer under GCC Clause 41 hereof or reduction in the rate of progress pursuant to GCC



Subclause 41.2; or

- (d) any changes in laws and regulations as provided in GCC Clause 36; or
- (e) any default or breach of the Contract by the Employer, or any activity, act or omission of the Employer, or the Project Manager, or any other contractors employed by the Employer; or
- (f) any other matter specifically mentioned in the Contract; or
- (g) any delay on the part of a sub-contractor, provided such delay is due to a cause for which the Contractor himself would have been entitled to an extension of time under this Subclause

by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Contractor.

40.2 Except where otherwise specifically provided in the Contract, the Contractor shall submit to the Project Manager a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Employer and the Contractor shall agree upon the period of such extension. In the event that the Contractor does not accept the Employer's estimate of a fair and reasonable time extension, the Contractor shall be entitled to refer the matter to a Dispute Board, pursuant to GCC Subclause 45.3.

40.3 The Contractor shall at all times use its reasonable efforts to minimize any delay in the performance of its obligations under the Contract.

In all cases where the Contractor has given a notice of a claim for an extension of time under GCC 40.2, the Contractor shall consult with the Project Manager in order to determine the steps (if any) which can be taken to overcome or minimize the actual or anticipated delay. The Contractor shall there after comply with all reasonable instructions, which the Project Manager shall give in order to minimize such delay. If compliance with such instructions shall cause the Contractor to incur extra costs and the Contractor is entitled to an extension of time under GCC 40.1, the amount of such extra costs shall be added to the Contract Price.

#### 41. Suspension

41.1 The Employer may request the Project Manager, by notice to the Contractor, to order the Contractor to suspend performance of any or all of its obligations under the Contract. Such notice shall specify the obligation of which performance is to be suspended, the effective date of the suspension and the reasons therefor. The Contractor shall thereupon suspend performance of such obligation, except those obligations necessary for the care or preservation of the Facilities, until ordered in writing to resume such performance by the Project Manager.

If, by virtue of a suspension order given by the Project Manager, other than by reason of the Contractor's default or breach of the Contract, the Contractor's performance of any of its obligations is suspended for an aggregate period of more than 90 days, then at any time thereafter and provided that at that time such performance is still suspended, the



Contractor may give a notice to the Project Manager requiring that the Employer shall, within 30 days of receipt of the notice, order the resumption of such performance or request and subsequently order a change in accordance with GCC Clause 39, excluding the performance of the suspended obligations from the Contract.

If the Employer fails to do so within such period, the Contractor may, by a further notice to the Project Manager, elect to treat the suspension, where it affects a part only of the Facilities, as a deletion of such part in accordance with GCC Clause 39 or, where it affects the whole of the Facilities, as termination of the Contract under GCC Subclause 42.1.

41.2 If

- (a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Appendix (Terms and Procedures of Payment) to the Contract Agreement, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in GCC Subclause 12.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, or fails to remedy the breach or take steps to remedy the breach within 14 days after receipt of the Contractor's notice; or
- (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas in accordance with GCC Subclause 10.2, or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities,

then the Contractor may by 14 days' notice to the Employer suspend performance of all or any of its obligations under the Contract, or reduce the rate of progress.

41.3 If the Contractor's performance of its obligations is suspended, or the rate of progress is reduced pursuant to this GCC Clause 41, then the Time for Completion shall be extended in accordance with GCC Subclause 40.1, and any and all additional costs or expenses incurred by the Contractor as a result of such suspension or reduction shall be paid by the Employer to the Contractor in addition to the Contract Price, except in the case of suspension order or reduction in the rate of progress by reason of the Contractor's default or breach of the Contract.

41.4 During the period of suspension, the Contractor shall not remove from the Site any Plant, any part of the Facilities or any Contractor's Equipment, without the prior written consent of the Employer.

42. Termination

42.1 In no case, the contractor shall terminate the contract unilaterally, without duly notifying the Employer.

42.2 The Employer may terminate the Contract at any time if the contractor :



- a) does not commence the work as per the Contract,
- b) abandons the work without completing,
- c) fails to achieve progress as per the Contract.

42.3 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

42.4 Fundamental breaches of Contract shall include, but shall not be limited to, the following :

- a) The Contractor uses the advance payment for matters other than the contractual obligations,
- b) the Contractor stops work for 30 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Project Manager;
- c) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 30 days;
- d) the Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation.
- e) a payment certified by the Project Manager is not paid by the Employer to the Contractor within 90 days of the date of the Project Manager's certificate;
- f) the Project Manager gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager;
- g) the Contractor does not maintain a Security, which is required; and
- h) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in the SCC.
- i) If the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract, pursuant to GCC 6.1.

42.5 When either party to the Contract gives notice of a breach of Contract to the Project Manager for a cause other than those listed under GCC 42.2 above, the Project Manager shall decide whether the breach is fundamental or not.

42.6 Notwithstanding the above, the Employer may terminate the Contract for convenience.

42.7 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

#### **42.8 Payment upon Termination**

If the Contract is terminated because of fundamental breach of Contract or for any other fault by the Contractor, the performance security shall be forfeited by the Employer. In such case, amount to complete the remaining works as per the Contract shall be recovered from the Contractor as Government dues.





#### 43. Assignment

43.1 Neither the Employer nor the Contractor shall, without the express prior written consent of the other party which consent shall not be unreasonably withheld, assign to any third party the Contract or any part thereof, or any right, benefit, obligation or interest therein or thereunder, except that the Contractor shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.

### I. Claims, Disputes, and Arbitration

#### 44. Contractor's Claims

44.1 If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall submit a notice to the Project Manager, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 30 days after the Contractor became aware, or should have become aware, of the event or circumstance.

If the Contractor fails to give notice of a claim within such period of 30 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Subclause shall apply.

The Contractor shall also submit any other notices, which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.

The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Project Manager. Without admitting the Employer's liability, the Project Manager may, after receiving any notice under this Subclause, monitor the record keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Project Manager to inspect all these records, and shall (if instructed) submit copies to the Project Manager.

Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Project Manager, the Contractor shall send to the Project Manager a fully detailed claim, which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect,

- (a) this fully detailed claim shall be considered as interim;
- (b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Project Manager may reasonably require; and
- (c) the Contractor shall send a final claim within 30 days after the end of the effects resulting from the event or circumstance, or



within such other period as may be proposed by the Contractor and approved by the Project Manager.

Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Project Manager and approved by the Contractor, the Project Manager shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within such time.

Each payment certificate shall include such amounts for any claim as have been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

The Project Manager shall agree with the Contractor or estimate: (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with GCC Clause 40, and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.

The requirements of this Subclause are in addition to those of any other Subclause, which may apply to a claim. If the Contractor fails to comply with this or another Subclause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Subclause.

In the event that the Contractor and the Employer cannot agree on any matter relating to a claim, either party may refer the matter to the Dispute and Arbitration pursuant to GCC 45 hereof.

#### **45. Disputes and Arbitration**

- 45.1 The Employer and the Contractor shall attempt to settle amicably by direct negotiation any disagreement or dispute arising between them under or in connection with the Contract.
- 45.2 Any dispute between the Parties as to matters arising pursuant to this Contract which cannot be settled amicably within thirty (30) days after receipt by one Party of the other Party's request for such amicable settlement may be referred to Arbitration within 30 days after the expiration of amicable settlement period.
- 45.3 In case of arbitration, the arbitration shall be conducted in accordance with the arbitration procedures published by the Nepal Council of Arbitration (NEPCA) at the place given in the SCC.





## Section 8 - Special Conditions of Contract

The following Special Conditions of Contract (SCC) shall supplement the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC. The clause number of the SCC is the corresponding clause number of the GCC.



| General Conditions                   | Ref. GCC | Special Conditions of Contract (SCC)  |
|--------------------------------------|----------|---|
| Definitions                          | 1.0      | <p>The Employer is:<br/><b>Grid Operation Department, Nepal Electricity Authority</b></p> <p>The Project Manager is:<br/><b>The Director, Grid Operation Department</b></p> <p>The Contractor is: <b>[to be inserted]</b></p> <p>The Contractor's representative is: <b>[to be inserted]</b></p> <p><b>Country of Origin:</b> all countries and territories as indicated in Section 5 of the bidding documents, Eligible Countries.</p>   |
| Law and Language                     | 5.0      | <p>5.1 The Contract shall be interpreted in accordance with the laws of: Nepal</p> <p>5.2 The ruling language is: English</p> <p>5.3 The language for communications is: English</p>  |
| Scope of Facilities                  | 7.3      | <p>The Contractor shall ensure the availability of spare parts for the supplied items for a minimum period of five (05) years from the operational acceptance by the Employer.</p> <p>The Contractor shall carry sufficient inventories to ensure an ex-stock supply of consumable spares for the Plant. Other spare parts and components shall be supplied as promptly as possible, but at the most within 6 months of placing the order and opening the letter of credit. In addition, in the event of termination of the production of spare parts, advance notification will be made to the Employer of the pending termination, with sufficient time to permit the Employer to procure the needed requirement. Following such termination, the Contractor will furnish to the extent possible and at no cost to the Employer the blueprints, drawings and specifications of the spare parts, if requested.</p> |
| Time for Commencement and Completion | 8.0      | <p>8.1 The Contractor shall commence work on the Facilities within <b>Fifteen (15) days</b> from the Effective Date for determining Time of Completion as specified in the Contract Agreement.</p> <p>8.2 The Time for Completion of the whole of the Facilities shall be <b>Twenty Four (24) months</b> from the Effective Date as described in the Contract Agreement.</p>  |
| Contractor's Responsibilities        | 9.0      | <p><b>Add the following new Sub-Clauses:</b><br/><b>GCC 9.9-- Existing Fences</b><br/>Where it is necessary to operate equipment through existing fences, the Contractor shall install suitable temporary gates. The temporary gates shall be constructed of materials and to standards equal to those of the existing fence. Before cutting the fences for the installation of temporary gates, the Contractor shall install adequate braces and additional posts, if necessary, on each side of the opening and shall fully anchor the fence so that all wires will maintain their original tension after opening is cut. Except when equipment is passing, such gates shall be kept closed. After</p>  |



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|  |  | <p>completion of the work, the fence shall be restored as nearly as practicable to its original condition. Deviation from the above requirement will be permitted only where the Contractor furnishes advanced written approval from the landowner or landowners for a different method of operation.</p> <p>Where it is necessary for the Contractor to remove or to alter portions of existing fences to permit construction, temporary fence protection shall be provided at all times during construction and upon completion of the construction, the fence shall be rebuilt in its original or relocated position.</p> <p>The cost of all work herein described shall be borne by the Contractor. Should the contractor refuse or neglect to perform any work required by the above provisions within twenty-four hours after notification by the Employer to do so, the Employer reserves the right to perform the work and the cost thereof will be deducted from payment due to the Contractor.</p> <p><b>GCC 9.10-- Transmission, Telegraph and Telephone Lines:</b><br/>The Contractor shall make all necessary or required provisions concerning any interference with the operation or maintenance of traffic or service of any transmission, telegraph or telephone lines existing on the date of receiving bids, caused by the work of the Contractor under this Contract, all in a manner satisfactory to the owners or operators and to the Employer.</p> <p>The Contractor shall notify the Employers of such facilities of any damage, which is his responsibility and shall promptly settle proper claims. Pending settlement of such claims by the Contractor, an appropriate sum as determined by the Employer may be withheld from payments due to the Contractor until the matter is settled.</p> <p>The cost of providing and maintaining all necessary or required watchmen, signals, guards and temporary structures, of making any necessary repairs, replacements, or similar operations and all or any other costs required by this Sub-Clause shall be borne by the Contractor.</p> <p><b>GCC 9.11--</b> The Contractor shall be responsible for selecting and constructing appropriate communication means necessary for the executing of the project at his own expense. If required, the Employer will assist the Contractor in obtaining licences/permits from the concerned government agencies.</p> <p><b>GCC 9.12 --</b> Gasoline, oil and lubricants for construction equipment and vehicles are available in Nepal and the Contractor will not be permitted to import such products for use on the work.</p> <p><b>GCC 9.13--</b> The Contractor shall be responsible for the arrangement of water supply for drinking and construction purposes at his own cost.</p> <p><b>GCC 9.14 --</b> The Contractor shall be responsible for the arrangement of electricity supply for construction and any other purposes at his own cost.</p> <p><b>GCC 9.15-- Operation and maintenance</b><br/>The Contractor shall provide at least one operating and maintenance expert at the site for a continuous period of three (3) months or any extension required thereof because of serious breakdown or any extensions of warranty period, from the commencement of the Defect Liability Period to train the local staff on the operation of various equipment.</p> <p><b>GCC 9.16-- Commissioning and pre-commissioning</b></p> |
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|                       |             | The Contractor shall provide sufficient, properly qualified personnel; shall supply and make available all raw materials, utilities, lubricants, chemicals, catalysts, other materials and facilities; and shall perform all work and services of whatsoever nature required to properly carry out Pre-commissioning, Commissioning and Guarantee Test all in accordance with the provisions of the Contract Agreement.   |
| <b>Contract Price</b> | <b>11.2</b> | The Contract Price shall be fixed and not adjustable.   |
| <b>Securities</b>     | <b>13.0</b> | <p>13.3.1 The Performance Security for the due performance of the Contract shall be provided by the Contractor as per the following:</p> <p>The Contractor shall deliver the Performance Security of amount as per ITB 44.1, ITB 36.5 (if any others) of Bidding Document to the Employer within fifteen (15) days after receiving the Letter of Acceptance, and shall, send a copy to the Employer. The Performance Security shall be denominated in the types and proportions of currencies in which the Contract Price is payable. The Contractor shall notify the Engineer when providing the Performance Security to the Employer.</p>   |
|                       |             | <p>13.3.2 The performance security shall be in the form of the Bank Guarantee (Unconditional) attached hereto in Section IX, Contract Forms. The Performance Security shall be issued by any registered "A" class commercial Bank in Nepal , or a foreign bank counter guaranteed by any registered "A" class commercial Bank in Nepal, in complete accordance with the specimen provided herein.</p> <p>The performance security as required by the clause 13.3.1 above, shall be valid for period covering entire contract execution period and any extension thereof, defect liability period plus three month.</p>  |
|                       |             | 13.3.3. The performance security shall not be reduced on the date of the Operational Acceptance.  |
|                       |             | <p>13.3.4 Add the following new Sub-Clause:</p> <p>"In case of award of the Contract to a Joint Venture, the performance security shall be submitted in the name of the Joint Venture and not in the name of the Lead Partner or any Partner(s) of the Joint Venture alone"</p> <p>13.3.5 For the Power Transformer and its components from all the manufacturer, the Contractor must offer the Performance Security in the form of the Bank Guarantee (Unconditional) for 5 (Five) years from the date of commissioning of the total work. To cover the Performance Security the Contractor shall issue a separate Bank Guarantee to NEA for the amount of 15% of the total quoted</p> |



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|                         |             | CIP Nepal border price of Power Transformer at least 30 days before the expiry of the main Performance Security else the main Performance Security may be forfeited.   |
| <b>Taxes and Duties</b> | <b>14.0</b> | <p><b>Delete this Clause in its entirety and replace it with the following:</b></p> <p><b>14.1 In the country of Origin</b></p> <p>The prices bid by the Contractor shall include all taxes, duties and other charges imposed outside the Employer's country on the production, manufacture, sale and transport of the Contractor's Equipment, Plant, Materials and Supplies to be used on or furnished under the Contract, and on the services performed under the Contract.</p> <p><b>14.2 In Nepal</b></p> <p>14.2.1 Unless otherwise specifically declared in the contract documents, the prices bid by the Contractor and its suppliers and subcontractors shall include business taxes and other taxes except VAT and Custom duty that may be levied in accordance with the laws and regulations in force or in effect in Nepal as of 30 days prior to the closing date for submission of tenders in the Employer's country on the Equipment, Plant, Materials and Supplies (permanent, temporary and consumables) acquired for the purpose of the Contract and on the services performed under the Contract. Whatsoever provisions made in the Contract document shall not relieve the Contractor, its suppliers and subcontractors from their responsibility to pay income tax that may be levied in the Employer's country on profits made by the Contractor, its suppliers and subcontractors in respect of the Contract.</p> <p>14.2.2 The Project is entitled for concessional 1% custom duty and VAT exemption for the import of Plant &amp; Mandatory Spare Parts to be supplied from abroad in Price Schedule No. 1. The Contractor has to follow all the procedures to import Plant &amp; Mandatory Spare Parts to be supplied from abroad in Price Schedule No. 1. The Contractor shall pay all the taxes and duties applicable at the point of entry (custom). Employer will refund such amount to the Contractor upon submission of the related original documents. However, Employer will not be responsible for any demurrage charges applicable due to delay in custom clearance.</p> <p>14.3 The unit bid price quoted in the Price Schedule Nos. 2 &amp; 4 are exclusive of VAT. VAT in each supply/progress bill shall be paid to the Contractor and as per law of Nepal he will be responsible for depositing the same to the concerned Revenue office in Nepal.</p> |



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|  |  | <p><b>14.4 Tax Deduction at Source (TDS)</b></p> <p>As per the law of Nepal the Employer will deduct TDS at the rate as applicable at the time of execution of the contract from each payment to the Contractor and deposit to the Revenue office. The Contractor shall be provided with all details in this regard promptly. The Contractor shall be responsible for obtaining tax clearance before issuance of Final Acceptance Certificate or before releasing the final 5% retention amount. <b><i>All firms carrying out works in Nepal are required to be registered at Inland Revenue office. The TDS shall be deducted from the contract amount as per the prevailing rules and regulation (i.e. Income Tax Act and Regulation) of Government of Nepal.</i></b></p> <p><b>14.5 Staff income tax</b></p> <p>The Contractor's staff, personnel and laborers, and those of its subcontractors, will be liable to pay personal income taxes in the Employer's country irrespective of local or foreign nationals on income earned including salaries and wages as applicable under the laws and regulations of Nepal. The Contractor shall perform such duties in regard to Tax Deduction at Source (TDS) thereof as may be applicable by such laws and regulations.</p> <p><b>14.6 Contractor's Plant, Equipment, Materials and Supplies</b></p> <p>Notwithstanding the provision of this document, Contractor's Plant and Equipment, including essential tools and spare parts thereof, imported by the contractor for the sole purpose of executing the Contract, and taken out of Nepal upon completion of the Works shall, except for Plant and Mandatory Spare Parts to be supplied from abroad in Price Schedule No.1, be exempt from payment of customs duties and taxes levied in Nepal. However, the Contractor shall deposit the amount or provide a Bank Guarantee to the GoN, Customs Department equal to the amount of customs duties at the prevailing laws, rules and regulations of Nepal for those imported equipment, plant, materials and supplies at the time of import. The amount of the deposit so provided will be refunded in Nepalese Rupees, or the Bank guarantee cancelled by the Employer, after the submission to the Employer of the re-export certificate issued by the Customs Department.</p> <p>If the Contractor disposes of any Contract's Equipment, spare parts, materials or supplies in Nepal, it shall pay all customs duties and taxes applicable on such Items under the laws and regulations of Nepal in force at the time and shall repay to the Employer the amount of any customs duties and taxes which may have been reimbursed to the Contractor by the Employer in connection with importation of such items.</p> |
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|  |               | <p>Contractor shall re-export all the equipment, plant, materials, and supplies within 90(Ninety) days after completion of the project.</p> <p>14.7 The Contractor shall maintain records satisfactory to the Employer documenting use of all Plant, materials and supplies imported into and/or procured for the performance of the Works. If any of such plant, materials and/or supplies, imported into Nepal or otherwise supplied to the Project at a special or preferential rate of Customs Duties or taxes, are misused or found to be used or appropriated for any purpose other than the Project, the Contractor shall be held fully responsible, and liable to pay customs duties, VAT and other taxes and/or any penalties as may be imposed in accordance with the prevailing laws and regulations of Nepal.</p> |
| <b>Licenses / Use of Technical Information</b> | <b>15.0</b>   | <p><b>Add the following second paragraph: Under Sub-clause 15.2.</b></p> <p>The Employer shall however shall have the right to reproduce any or all drawings, documents and other materials furnished to the Employer for the purpose of the Contract and in addition, if required, for operation and maintenance.</p>  |
| <b>Representatives</b>                         | <b>17.0</b>   | <p><b>17.2.4 Add the following at the end of this Sub- Clause</b></p> <p>The application of permission of leaving the site/Country by the Construction Manager shall be submitted to Project Manager, NEA for approval.</p>   |
| <b>Subcontracting</b>                          | <b>19.0</b>   | <p><b>Add the following paragraph at the end of this sub Clause</b></p> <p>"The Contactor is not encouraged to add or the delete the list finalized during the contract signing unless special circumstance which is not in the control of the contractor is evidenced. If such situation arise, the qualification requirement of the manufacturer of the major items and sub-contractor of the major civil work, shall be as that stipulated in "Part I, "Evaluation and Qualification Requirement" of the bidding document.</p>   |
| <b>Design and Engineering</b>                  | <b>20.3.2</b> | <p><b>Change "fourteen (14) days to "twenty-one (21) days in both paragraphs of this Sub-Clause.</b></p>  |
| <b>Procurement</b>                             | <b>21.0</b>   | <p><b>21.3.2 Add the following at the end of this Sub-Clause:</b></p> <p>The Employer shall in no way be responsible for the condition of road and access.</p> <p><b>21.3.4 Add the following at the end of this Sub-Clause:</b></p> <p>"The Contractor shall restore all such facilities, as far as possible, to its original condition at its own expense and to the satisfaction of the Owner of the Facilities." In case of any damage, the Contractor shall restore all such facilities, as far as possible, to its original condition at its own expense and to the satisfaction of the Employer."</p>  |





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|               |      | <p><b>21.4 Custom Clearances;</b></p> <p><b>Add the following paragraph at the beginning of this Sub-Clause:</b></p> <p>The Contractor shall familiarize himself with the rules and regulations of Nepal with regard to customs, duties, taxes, importation and clearing of goods and equipment and the like and the Contractor shall follow the required procedures regardless of the relief provided by the Employer. The Employer will provide assistance whenever possible.</p>   |
| Installations | 22.0 | <p>22.1.1 Add the following at the end of the second paragraph:</p> <p>The checking of any setting-out by the Employer shall not relieve the Contractor of his responsibility for the accuracy thereof.</p> <p>22.1.3 Add the following Sub Clause:</p> <p>Expatriate personnel engaged for work in Nepal may require work permit issued by the Nepalese Authorities. The Contractor shall be responsible for applying and obtaining such permits. Such applications shall be made in good time so as to enable the completion of the work in accordance with the approved Work Program. The Employer will assist the Contractor to obtain the permit.</p> <p>22.2.5 Working Hours</p> <p>Normal working hours are: The Contractor shall be responsible for following the normal working hours to specific location and rules.</p> <p>22.2.7 Health and Safety</p> <p>(d) The Contractor shall throughout the contract (including the Defect Liability Period):</p> <ul style="list-style-type: none"> <li>(i) conduct Information, Education and Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labor (including all the Contractor's employees, all Sub-Contractors and Employer's and Project Manager's employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to of Sexually Transmitted Diseases (STD)—or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular;</li> <li>(ii) provide male or female condoms for all Site staff and labor as appropriate; and</li> <li>(iii) Provide for STI and HIV/AIDS screening, diagnosis, counseling and referral to a dedicated national STI and</li> </ul> |





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|  |  | <p>HIV/AIDS program, (unless otherwise agreed) of all Site staff and labor.</p> <p>The Contractor shall include in the program to be submitted for the execution of the Facilities under Sub clause 18.2 an alleviation program for Site staff and labor and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub clause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for the preparation and implementation this program shall not exceed the amount dedicated for this purpose.</p> <p>(iv) Plan the health and safety measures they will put in place on site in relation to COVID-19 prevention and controls, including but not limited to, PPE requirements, site set up, training, induction and mobilization of new personnel, equipment and plants cleaning and other hazard management measures while undertaking site work activities, site visitor's health and safety protocols, as well as the approach to the monitoring and reporting of the Plan. The Plan should be fit for purpose for the particular construction works of this contract and be aligned with any relevant government regulations and guidelines on COVID-19 prevention and controls, as well as workplace safety requirements, or in the absence thereof, to international good practice guidelines.</p> <p>22.3.4 Add the Sub-Clause 22.3.4 "Duties on Contractor's Equipment, Plant, Materials and Supplies"</p> <p>Notwithstanding the provision of this document, Contractor's Plant and Equipment, including essential tools and spare parts thereof, imported by the contractor for the sole purpose of executing the Contract, and taken out of Nepal upon completion of the Works shall, except for Plant and Mandatory Spare Parts to be supplied from abroad in Price Schedule No.1, be exempt from payment of customs duties and taxes levied in Nepal. However, the Contractor shall deposit the amount or provide a Bank Guarantee to the GoN, Customs Department equal to the amount of customs duties at the prevailing laws, rules and regulations of Nepal for those imported equipment, plant, materials and supplies at the time of import. The amount of the deposit so provided will be refunded in Nepalese Rupees, or the Bank guarantee cancelled by the Employer, after the submission to the Employer of the re-export certificate issued by the Customs Department.</p> |
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|                             |             | <p>If the Contractor disposes of any Contract's Equipment, spare parts, materials or supplies in Nepal, it shall pay all customs duties and taxes applicable on such items under the laws and regulations of Nepal in force at the time and shall repay to the Employer the amount of any customs duties and taxes which may have been reimbursed to the Contractor by the Employer in connection with importation of such items.</p> <p>Contractor shall re-export all the equipment, plant, materials, and supplies within 90(Ninety) days after completion of the project.</p> <p>22.4 .1 Add the following Sub-Clause</p> <p>Site Regulations and Safety</p> <p>The Contractor shall comply with all the National Legislatures, Environmental Acts, proposed Environmental legislatures and the proposed mitigation measures in preparing proposed site regulations and plan for approval.</p> <p>The Contractor shall take all reasonable steps to protect the environment on and off the Site and avoid damage or nuisance to persons to persons or to property of the public or others resulting from pollution, noise or other causes as a consequence of his method of operation.</p> <p>During the progress of the Contract, the Contractor and his Sub-contractors shall abide at all times by all existing Acts on environmental protection and rules made there under, regulations, notifications bye-laws of the His Majesty's Government of Nepal, and any other law, bye-law, regulations that may be passed or notifications that may be issued in this respect in future.</p> <p>22.4.2 Add the following Sub - Clause</p> <p>Use of Explosives;</p> <p>No blasting or work involving the use of explosives will be permitted in the substation area or adjacent areas under this Contract.</p> <p>22.6 Add the following at the end of first paragraph:</p> <p>The materials to be removed shall be incinerated or disposed off at places which will not be unsightly or objectionable to the inhabitants of the area following all environmental requirements.</p> |
| <b>Tests and Inspection</b> | <b>23.0</b> | <p>23.2 Add the following at the end of this Sub-Clause:</p> <ul style="list-style-type: none"> <li>▪ The Employer and the Project Manager or their designated representatives shall be entitled to attend at his own cost to witness the tests for the following equipments at Manufacturer's/Contractor's factory.</li> </ul>  |



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|  |  | <ul style="list-style-type: none"> <li>▪ 132/33kV, 4*100MVA Power Transformer (2 lot of Inspection) <ul style="list-style-type: none"> <li>▪ Core &amp; Coil Stage Inspection – 2 persons/lot</li> <li>• Final Factory Acceptance Test – 2 persons/lot</li> </ul> </li> <li>▪ 132/33kV, 2*63MVA Power Transformer (2 lot of Inspection) <ul style="list-style-type: none"> <li>• Core &amp; Coil Stage Inspection – 2 persons/lot</li> <li>• Final Factory Acceptance Test – 2 persons/lot</li> </ul> </li> <li>▪ 132/11kV, 2*45MVA Power Transformer (2 lot of Inspection) <ul style="list-style-type: none"> <li>• Core &amp; Coil Stage Inspection – 2 persons/lot</li> <li>• Final Factory Acceptance Test – 2 persons/lot</li> </ul> </li> <li>▪ 33/11kV, 6*24MVA Power Transformer (3 lot of Inspection) <ul style="list-style-type: none"> <li>• Core &amp; Coil Stage Inspection – 2 persons/lot</li> <li>• Final Factory Acceptance Test – 2 persons/lot</li> </ul> </li> <li>• 132 kV &amp; 33 kV CB-2 persons</li> <li>• 132 kV &amp; 33 kV DS-2 persons</li> <li>▪ Control &amp; Relay Panel– 2 Person</li> <li>▪ 33 kV &amp; 11 kV XLPE Cable-2 Person</li> <li>▪ Instrument Transformers &amp; Lightning Arrestor – 2 Person</li> <li>▪ 11kV Switchgears – 2 Persons</li> <li>▪ as per Employers Requirements (Technical Specifications)</li> </ul> <p>In case of Transformer testing and inspection (Core &amp; coil stage inspection &amp; Final Factory acceptance Test), technical representative from separate independent body or lab recognized (associated with power transformer or its testing) also should be present, whose cost will be incurred by contractor, employer won't be liable to pay those charges. Independent body or lab should be member in the group of Short Circuit Testing Liasion (STL) of Europe and should be involved in transformer testing for at least 10 years.</p> <p>23.3 Supplementing Sub Clause 23.3</p> <p>The Contractor shall intimate the Project Manager the detailed program about the tests and/or inspection and of the place and time thereof at least <b>fifteen (15) days</b> in advance in case of domestic supplies &amp; <b>thirty (30) days</b> in advance in case of foreign supplies.</p> <p>23.4 Supplementing Sub-Clause GC 23.4</p> <p>The Contractor shall provide the Project Manager with a certified report of the results of any such test and/or inspection within fifteen (15) days after completion of tests"</p> |
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|  |  | <p>23.6 Add the following at the end of this Sub-Clause:</p> <p>All costs incurred by the Employer including all travelling and board and lodging expenses by the repetition of the tests or false call for tests shall be borne by the Contractor pursuant to GCC Sub-Clause 23.2. Any delay in delivery due to retest or false call shall not constitute a release of the Contractor from his responsibilities for delay.</p> <p>23.12 Add the following sub clause</p> <p><b>Type Test</b></p> <p>The Bidders shall have to furnish copies of type test certificate of all the equipment/material as applicable supplied against this specification for the tests carried out during last ten years. If the successful bidder fails to submit the type test reports, type test would be conducted by the contractor in the presence of authorized representative of the Employer at no additional cost implications to the Employer. In case of Power Transformer, type test shall be witnessed by technical representative from separate independent body or lab recognized (associated with power transformer or its testing) at no additional cost to the Employer. The type tests conducted earlier should have either been conducted in accredited laboratory (accredited by the national accreditation body of the country where laboratory is located) or any government approved laboratory..</p> <p>23.13 Add the following sub clause</p> <p><b>Routine Tests</b></p> <p>These tests would be conducted on raw materials and other finished materials in accordance with provisions of IEC Standards. Proper record of all Routine tests has to be maintained and made available to the Employer on demand.</p> <p>23.14 Add the following sub clause</p> <p><b>Acceptance Tests</b></p> <p>These tests would be conducted as per Quality Assurance Programme approved by the Employer on each and every lot of finished material, which is ready for dispatch. The tests shall be conducted in the presence of Employer authorized representative(s).</p> <p>Note: For all type, routine and acceptance test, the acceptance values shall be the values guaranteed by the bidder in the guaranteed technical particulars of his proposal or the acceptance test value specified in this</p> |
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|   |             | <p>specification, whichever is more stringent for that particular test.</p> <p>Correct grade and quality of all the materials including steel and zinc shall be used by the Contractor. Employer reserves the right of carrying out any inspection or test of reasonable nature at Contractor's/ Manufacturer's works, or at site, or at any approved laboratory in addition to the tests as specified above to satisfy himself that the materials comply with the specifications without any extra cost.</p> <p><b>23.15 Add the following sub clause</b></p> <p><b>Material Dispatch Clearances</b></p> <p>After the materials have been found acceptable a Material Dispatch Clearance (MDC) shall be issued in writing by the Owner representative without which no materials should be dispatched.</p> <p>Necessary procedure for packing shall be followed before dispatch of material as given in Technical Specifications</p>   |
| <b>Completions of Facilities</b>                | <b>24.0</b> | <p><b>24.2</b> Add the following paragraph at the end of this clause:</p> <p>If Appendix to the Contract Agreement titled "Scope of Works and Supply by the Employer " does not specify the personnel and other necessary materials required for the Pre-commissioning the facilities, the supply and management of same shall be the responsibility of the Contractor. The Contractor is responsible for providing the Pre-commissioning training to the NEA staffs if so requested by NEA and the cost for the same shall be deemed to have been included in the Price Schedule. The maximum number of NEA, Staffs to receive the pre-commissioning training from the contractor shall be 10 (ten).</p> <p><b>24.8 Delete this Sub-Clause in its entirety and replace by the following:</b></p> <p>The issue of the completion certificate does not relieve the Contractor from his responsibilities for the care and custody of the Facilities or the relevant parts thereof together with the risk of loss or damage thereto.</p> |
| <b>Commissioning and Operational Acceptance</b> | <b>25.0</b> | <p><b>25.1.2</b> Add "if so specified in corresponding Appendix (Scope of Works and Supply by the Employer)" at the end of the paragraph.</p> <p><b>25.2.2</b> The Guarantee Test of the Facilities shall be successfully completed within one week from the date of Completion.</p> <p><b>25.3.1(e)</b> Add the following new Sub-Clause:</p> <p>Six (6) sets of as built drawings, operating and maintenance</p>  |



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|                                  |             | <p>manuals and CD's, USB drives etc. as per Technical Specifications of the Bidding Documents are furnished.</p> <p>25.3.3 Change "seven (7) days" to "twenty one (21) days"</p> <p>25.3.4 Change "seven (7) days" to "twenty one (21) days"</p>   |
| <b>Completion Time Guarantee</b> | <b>26.0</b> | <p>26.2 Applicable rate for liquidated damages: 0.05 % of the Contract price per each day per delay.</p> <p>Maximum deduction for liquidated damages: ten percent (10%) of the Contract Price.</p> <p>26.3 No bonus will be given for earlier Completion of the Facilities or part thereof.</p>  |
| <b>Defect Liability</b>          | <b>27.0</b> | <p><b>27.2 "Defect Liability Period"</b></p> <p>27.2 Delete first paragraph of the Sub-Clause and replace with the following:<br/>The Defect Liability period shall be twelve (12) months from the date of issuance of Operational Acceptance.</p> <p>27.8 Add the following paragraph at the end of this Sub-Clause:<br/>Upon correction of the defects in the Facilities or any part thereof by repair/replacement, such repair/replacement shall have the Defect Liability Period extended by a period of twelve (12) months from the time such repair/replacement of the Facilities or any part thereof.</p> <p>27.9 Change "Completion" in line 5 of the Sub Clause to "Operational Acceptance"</p> <p>27.10 Time Period shall be <b>24 Months</b></p> <p>27.11 <b>Add the following new Sub Clause:</b><br/><b>The Defect Liability period for the Power Transformer and its components shall be 5 (Five) years from the date of issuance of Operational Acceptance.</b></p> |
| <b>Transfer of Ownership</b>     | <b>31.0</b> | <p>31.1 Add "and upon endorsement of the dispatch documents in favor of the Employer." at the end of this Sub-Clause.</p> <p>31.4 Add the following at the end of this Sub-Clause:<br/>"Provided quantity of any Plant and Equipment specially stipulated in the Contract shall be the property of the Employer whether or not incorporated in the Facilities."</p> <p>31.5 <b>In the fourth line, replace " Completion of the Facilities" by "Operational Acceptance of the Facilities"</b></p>   |
| <b>Care of Facilities</b>        | <b>32.0</b> | 32.1 <b>Replace all "Completion" by "Operational Acceptance"</b>   |
| <b>Loss of Damage</b>            | <b>33.0</b> | 33.1 Add "and defective design, material or workmanship of the Contractor" after "the supply and installation of the Facilities".  |
| <b>Insurance</b>                 | <b>34.0</b> | 34.1 (c) Add "including property of the Employer" after the word "property".   |



|   |             |   |
|---|-------------|---|
| <b>Change in Laws and Regulations</b>   | <b>36.0</b> | <p>36.1 Add the following after "Contract." in line 12 in this Sub-Clause:</p> <p>However, these adjustments would be restricted to direct transactions between the Employer and the Contractor and not on procurement of raw materials, intermediary components, etc. by the Contractor.</p>   |
| <b>Force Majeure</b>                    | <b>37.0</b> | <p>37.6 Replace "either party may terminate." in line 7-9 by "the dispute will be resolved in accordance with GC Clause 45." in this Sub-Clause.</p> <p>37.7 Delete this Sub-Clause in its entirety.</p>  |
| <b>Change in the Facilities</b>         | <b>39.0</b> | <p>39.1.2 <b>Interchange the words</b> "Employer" and "Project Manager" in <b>lines 2 and 3</b> in this Sub-Clause.</p> <p>39.2.2 <b>Delete this Sub-Clause in its entirety and replace with the following:</b> "Upon instruction from the Project Manager, the Contractor shall prepare the 'Change Proposal' without any cost to the Employer".</p> <p>39.2.5 <b>Replace</b> "shall withdraw the proposed Change and shall notify the Contractor in writing thereof." at the end of the first paragraph by "and the Contractor shall agree on specific rates for valuation of the Change." in this Sub-Clause.</p> <p>39.4 <b>Add this new Sub-Clause as follows:</b></p> <p>The scope of work under the package shall be as per the Volume -II "Employer's Requirement" of Bidding Documents. The quantity variation applicable for the existing scope shall be generally as per the following.</p> <p>The Employer reserves the right to increase or decrease the quantity of different items of the specified goods and services to the extent of <b>fifteen percent (15%)</b> of the revised contract price pursuant to the GC Clause 11.1, by way of suitable amendment to the Contract, without any change in unit rate/price and/or other terms and conditions of the Contract. However, the quantities of individual items of goods and services may vary up to any extent.</p> |
| <b>Extension of Time for Completion</b> | <b>40.0</b> | <p>40.2 Delete "as soon as reasonably practicable ..... circumstance." And replace within 21 days of the identification of the event of such change known to the Contractor.</p>  |
| <b>Suspension</b>                       | <b>41.0</b> | <p>41.1 Replace "request" by "instruct" in the line 1 of the first Paragraph.</p> <p>41.5 Add this new Sub-Clause as follows:</p> <p>If the Contractor chooses not to treat prolonged suspension as an omission or termination, the Employer shall, upon request of the Contractor, take over the responsibility for protection, storage, security and insurance of the suspended work and of the plant which has been delivered to the Site and which is affected by suspension and the risk of loss or</p>  |





|   |           |   |
|---|-----------|---|
|   |           | <p>damage thereto shall thereupon pass to the Employer. After receipt of permission or an order to proceed, the Contractor shall after due notice to the Project Manager examine the works and the Plant affected by the suspension. The Contractor shall make good any deterioration or defect in or loss of the Facilities that may have occurred during the suspension. Cost properly incurred by the Contractor, which would not have incurred but for the suspension shall be added to the Contract Price together with profit. The Contractor shall not be entitled for costs incurred in making good any deterioration, defect, or loss caused by faulty workmanship or materials or by the Contractor's failure to take the measures such as protect and secure and insure against any deterioration, loss or damage during suspension.</p> |
| <b>Termination</b>  | <b>42</b> | 42.4 (h) The maximum number of days is: 200   |
| <b>Disputes and Arbitration</b>   | <b>45</b> | 45.3 The Place is Kathmandu, Nepal.   |
| <b>Add this new Clause SCC 46 (Supplementing to GCC)<br/><u>Construction of the Contract Document</u></b> |           | <p>46.1 The Contract will be signed in two (2) originals and the Contractor shall be provided with one signed original and the other will be retained by the Employer.</p> <p>46.2 The Contractor shall provide free of cost to the Employer all the engineering data, drawing and descriptive materials submitted with the bid, in at least two (2) copies to form a part of the Contract immediately after Notification of Award.</p> <p>46.3 Subsequent to signing of the Contract, the Contractor at his own cost shall provide the Employer with at least five (5) true copies of Contract Agreement within thirty (30) days after signing of the Contract.</p>  |
| <b>Add this new Clause SCC 47(Supplementing to GCC)<br/>Debarring manufacturer</b>                        |           | 47.1 If 2(Two) or more nos. of Power Transformers supplied under this contract by the manufacturer of Power Transformer is damaged within 2 (Two) years from the date of issue of Operational Acceptance, then the manufacturer may be debarred to participate in any competitive bidding of NEA for next 2 (Two) years.  |





## Section 9 - Contract Forms

### Table of Forms

|  |    |
|--|----|
| Letter of Intent .....   | 2  |
| Notification of Award .....  | 3  |
| Contract Agreement .....   | 4  |
| Appendix 1 - Terms and Procedures of Payment .....   | 7  |
| Appendix 2 - Price Adjustment .....  | 9  |
| Appendix 3 - Insurance Requirements .....  | 10 |
| Appendix 4 - Time Schedule.....  | 13 |
| Appendix 5 - List of Major Items of Plant and Services and List of Approved Subcontractors ..... | 14 |
| Appendix 6 - Scope of Works and Supply by the Employer .....                                     | 15 |
| Appendix 7 - List of Documents for Approval or Review .....                                      | 16 |
| Appendix 8 - Functional Guarantees .....   | 17 |
| Performance Security .....   | 19 |
| Advance Payment Security .....   | 20 |



# Letter of Intent

[on letterhead paper of the Employer]

Date: .....

To: .....name and address of the Contractor .....

Subject: ..... Issuance of letter of intent to award the contract .....

This is to notify you that, it is our intention to award the contract .....[insert date] .....for execution of the ..... [insert name of the contract and identification number, as given in the Contract Data/SCC] to you as your bid price ..... [insert amount in figures and words in Nepalese Rupees] as corrected and modified in accordance with the Instructions to Bidders is hereby selected as substantially responsive lowest evaluated bid.

Authorized Signature: .....

Name: .....

Title: .....

CC:

[Insert name and address of all other Bidders, who submitted the bid]

[Notes on Letter of Intent

The issuance of Letter of Intent is the information of the selection of the bid of the successful bidder by the Employer and for providing information to other unsuccessful bidders who participated in the bid as regards to the outcome of the procurement process. This standard form of Letter of Intent to Award should be filled in and sent to the successful Bidder only after evaluation and selection of substantially responsible lowest evaluated bid.]



## Notification of Award

[ Employer's letterhead ]

### Letter of Acceptance

Date: .....

To: .....

name and address of the Contractor .....

Subject: ..... Notification of Award

This is to notify that your Bid dated . . . . **date** . . . . for execution of the . . . . . **name of the contract and identification number, as given in the Contract Data/SCC** . . . . . for the Contract price of the equivalent of **[iamount in figures and words in the currency.....]**, as corrected in accordance with the Instructions to Bidders is hereby accepted in accordance with the Instruction to Bidders.

You are hereby instructed to contract this office to sign the formal contract agreement within 15 days with Performance Security of **.....amount....** in accordance with the Conditions of Contract, using for that purpose the Performance security Form included in Section 9 (Contract Forms) of this Bidding Document.

The Employer shall forfeit the bid security, in case you fail to furnish the Performance Security and to sign the contract within specified period.

Authorized Signature: .....

Name and Title of Signatory: .....

Attachment: Contract Agreement



# Contract Agreement

THIS AGREEMENT made on the [ *insert number* ] day of [ *insert month* ], [ *insert year* ],

BETWEEN

(1) [ *name of the employer* ], a corporation incorporated under the laws of [ *country of the employer* ] and having its principal place of business at [ *address of the employer* ] (hereinafter called "the Employer"), and (2) [ *name of the contractor* ], a corporation incorporated under the laws of [ *country of the contractor* ] and having its principal place of business at [ *address of the contractor* ] (hereinafter called "the Contractor").

WHEREAS the Employer desires to engage the Contractor to design, manufacture, test, deliver, install, complete and commission certain Facilities, viz. [ *list of facilities* ] ("the Facilities") and the Contractor have agreed to such engagement upon and subject to the terms and conditions hereinafter appearing.

NOW IT IS HEREBY AGREED as follows:

## Article 1

### Contract Documents

#### 1.1 Contract Documents (Reference GCC Clause 2)

The following documents shall constitute the Contract between the Employer and the Contractor, and each shall be read and construed as an integral part of the Contract:

- (a) This Contract Agreement and the Appendixes hereto
- (b) Notification of Award-Letter of Acceptance
- (c) Letter of Bid and Price Schedules submitted by the Contractor
- (d) The Bid Addendum and Clarifications
- (c) Special Conditions of Contract
- (d) General Conditions of Contract
- (f) Employer Requirements
- (g) Other completed Bidding Forms submitted with the Letter of Bid
- (h) Any other documents forming part of the Employer's Requirements
- (i) Any other documents shall be added here

#### 1.2 Order of Precedence (Reference GCC Clause 2)

In the event of any ambiguity or conflict between the Contract Documents listed above, the order of precedence shall be the order in which the Contract Documents are listed in Article 1.1 (Contract Documents) above.

#### 1.3 Definitions (Reference GCC Clause 1)

Capitalized words and phrases used herein shall have the same meanings as are ascribed to them in the General Conditions.



- Article 2**
- Contract Price and Terms of Payment**
- 2.1 **Contract Price** (Reference GCC Clause 11)
- The Employer hereby agrees to pay to the Contractor the Contract Price in consideration of the performance by the Contractor of its obligations hereunder. The Contract Price shall be the aggregate of [. . . amounts of foreign currency in words . . . ], [. . . amounts in figures. . . ] as specified in Price Schedule No. 5 (Grand Summary), [. . . amounts of local currency in words . . . ], [. . . amounts in figures. . . ], or such other sums as may be determined in accordance with the terms and conditions of the Contract.
- 2.2 **Terms of Payment** (Reference GCC Clause 12)
- The terms and procedures of payment according to which the Employer will reimburse the Contractor are given in the Appendix (Terms and Procedures of Payment) hereto.
- Article 3**
- Effective Date**
- 3.1 **Effective Date** (Reference GCC Clause 1)
- The Effective Date upon which the period until the Time for Completion of the Facilities shall be counted from is the date when all of the following conditions have been fulfilled:
- (a) This Contract Agreement has been duly executed for and on behalf of the Employer and the Contractor.
  - (b) The Contractor has submitted to the Employer the performance security and the advance payment guarantee.
  - (c) The Employer has paid the Contractor the advance payment.
- Each party shall use its best efforts to fulfill the above conditions for which it is responsible as soon as practicable.
- 3.2 If the conditions listed under 3.1 are not fulfilled within three (3) months from the date of this Contract notification because of reasons not attributable to the Contractor, the Parties shall discuss and agree on and the Time for Completion and/or other relevant conditions of the Contract. The Contractor shall not however, benefit (in reckoning the Time for Completion) on account of its delay in providing the Performance Security or the Bank Guarantee for advance payment beyond the period provided in the Contract
- Article 4**
- Communications**
- 4.1 The address of the Employer for notice purposes, pursuant to GCC 4.1 is: [ *Employer's address* ].
- 4.2 The address of the Contractor for notice purposes, pursuant to GCC 4.1 is: [ *Contractor's address* ].
- Article 5.**
- Appendixes**
- 5.1 The Appendixes listed in the attached List of Appendixes shall be deemed to form an integral part of this Contract Agreement.
- 5.2 Reference in the Contract to any Appendix shall mean the Appendixes attached hereto, and the Contract shall be read and construed accordingly.



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

Signed by, for and on behalf of the Employer

[ Signature ]

[ Title ]

in the presence of

[ Signature ]

[ Title ]

Signed by, for and on behalf of the Contractor

[ Signature ]

[ Title ]

in the presence of

[ Signature ]

[ Title ]

## APPENDIXES

Appendix 1 - Terms and Procedures of Payment

Appendix 2 - Price Adjustment

Appendix 3 - Insurance Requirements

Appendix 4 - Time Schedule

Appendix 5 - List of Major Items of Plant and Services and List of Approved Subcontractors

Appendix 6 - Scope of Works and Supply by the Employer

Appendix 7 - List of Documents for Approval or Review

Appendix 8 - Functional Guarantees

Appendix 9 Minutes of Meeting held prior to contract signing

Appendix 10 Price Schedules



## Appendix 1 - Terms and Procedures of Payment

In accordance with the provisions of GCC Clause 12 (Terms of Payment), the Employer shall pay the Contractor in the following manner and at the following times, based on the Price Breakdown given in the section on Price Schedules. Payments will be made in the currencies quoted by the Bidder unless otherwise agreed between the parties. Applications for payment in respect of part deliveries may be made by the Contractor as work proceeds.

### (A) Terms of Payment

#### Schedule No. 1 - Plant and Mandatory Spare Parts Supplied from Abroad

In respect of plant and mandatory spare parts supplied from abroad, the following payments shall be made in USD or NRs. as applicable.

Ten (10%) of the total CIP amount in two installments as an advance payment against receipt of invoice and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. Five (5%) amount shall be paid against receipt of invoice and irrevocable advance payment security and remaining Five (5%) after mobilization at site by the contractor. The advance payment security may be reduced in proportion to the value of the plant and mandatory spare parts delivered to the site, as evidenced by delivery documents.

Seventy percent (70%) of the total or pro rata CIP amount upon Incoterms "CIP," upon delivery of plant and equipment (including mandatory spare parts) to the site and issuance of delivery certificate by the Employer's engineer within forty five (45) days after receipt of following invoice and documents through direct payment.

- i) 6 copies of contractor's invoice certified by the Employer showing contract no. goods description, quantity, unit price and total amount.
- ii) Payment Authorization as per the specified format duly signed by the authorized official.
- iii) Original and 6 copies of negotiable, clean, on-board bill of lading marked freight prepaid and 6 copies of non-negotiable bill of lading.
- iv) 6 copies of Detailed Packing list identify contents of each package.
- v) Insurance Policy/Certificate.
- vi) Manufacturer's / supplier's warranty certificate.
- vii) Dispatch authorization issued by the employer with the factory inspection report.
- viii) Certificate of origin.

Fifteen percent (15%) of the total or pro rata CIP or amount upon issue of the Completion Certificate, within 45 days after receipt of invoice.

Five percent (5%) of the total or pro rata CIP or amount upon completion of defect liability period, within 45 days after receipt of invoice.

#### Schedule No. 2 - Plant and Mandatory Spare Parts Supplied from Within the Employer's Country

In respect of plant and mandatory spare parts supplied from within the Employer's country, the following payments shall be made in NRs. only.

Ten (10%) of the total EXW amount in two installments as an advance payment against receipt of invoice and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. Five (5%) amount shall be paid against receipt of invoice and irrevocable advance payment security and remaining Five (5%) after mobilization at site by the contractor. The advance



payment security may be reduced in proportion to the value of the plant and mandatory spare parts delivered to the site, as evidenced by delivery documents.

Seventy percent (70%) of the total or pro rata EXW amount upon Incoterms "Ex-Works," upon delivery of plant and equipment (including mandatory spare parts) to the site and issuance of delivery certificate by the Employer within forty five (45) days after receipt of invoice through direct payment.

- i) 6 copies of contractor's invoice certified by the Employer showing contract no. goods description, quantity, unit price and total amount.
- ii) Payment Authorization as per the specified format duly signed by the authorized official.
- iii) Original and 6 copies of negotiable, clean, on-board bill of lading marked freight prepaid and 6 copies of non-negotiable bill of lading.
- iv) 6 copies of Detailed Packing list identify contents of each package.
- v) Insurance Policy/Certificate.
- vi) Manufacturer's / supplier's warranty certificate.
- vii) Dispatch authorization issued by the employer with the factory inspection report.
- viii) Certificate of origin

Fifteen percent (15%) of the total or pro rata EXW amount upon issuance of the Completion Certificate, within 45 days after receipt of invoice.

Five percent (5%) of the total or pro rata EXW amount upon completion of defect liability period, within 45 days after receipt of invoice.

### **Schedule No. 3 - Design Services**

***The amount of Design Services should be built in the quoted price for Supply and Services.***

### **Schedule No. 4 - Installation and Other Services**

In respect of installation services for both the foreign and local currency portions, the following payments shall be made in **NRs. only by direct payment through Cheque.**

Ten (10%) of the total EXW amount in two installments as an advance payment against receipt of invoice and an irrevocable advance payment security for the equivalent amount made out in favor of the Employer. Five (5%) amount shall be paid against receipt of invoice and irrevocable advance payment security and remaining Five (5%) after mobilization at site by the contractor. The advance payment security may be reduced in proportion to the value of the plant and mandatory spare parts delivered to the site, as evidenced by delivery documents.

Seventy percent (70%) of the total or pro rata EXW amount upon Incoterms "Ex-Works," upon delivery of plant and equipment (including mandatory spare parts) to the site and issuance of delivery certificate by the Employer within forty five (45) days after receipt of invoice through direct payment.

Fifteen percent (15%) of the total or pro rata EXW amount upon issuance of the Completion Certificate, within 45 days after receipt of invoice.

Five percent (5%) of the total or pro rata EXW amount upon completion of defect liability period, within 45 days after receipt of invoice.





**(B) Payment Procedures:**

**The procedures to be followed in applying for certification and making payments shall be as follows:**

The procedures to be followed in applying for certification and making payments are as explained in above respective paras. The Employer shall make payments promptly within forty five (45) days of submission of an invoice by the Contractor.

**Payment of Taxes & duties:**

Provisions in GCC 14 shall apply in respect to Taxes & Duties.

Additional Sub-Clause for Submission of Bills for Payment:

- i. All Payments for the works in part or full shall be based upon measurements or otherwise as per the Contract. Immediately after execution of foundation of any structure or otherwise, but before filling the trench or foundation, the Contractor shall take and record measurements in presence of the authorized representatives of the Employer.
- ii. All Measurements recorded in a Measurement Book (MB) issued by the Employer should be signed with date by the Contractor and the Employer.
- iii. The Value of work executed shall be determined by the Employer.
- iv. The Contractor seeking any payment shall submit the bills with the relevant MBs and other requisite documents, duly signed by the site representatives of the Employer, to the Employer. The Employer will then verify the bills and approve for release of payment.

**Note:** No interest shall be paid on delayed payment in terms of GCC sub-clause 12.3



## Appendix 2 - Price Adjustment

Not Applicable



## Appendix 3 - Insurance Requirements

### (A) Insurances To Be Taken Out By The Contractor

In accordance with the provisions of GCC Clause 34, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, such approval not to be unreasonably withheld.

#### (a) Cargo Insurance

Covering loss or damage occurring, while in transit from the supplier's or manufacturer's works or stores until arrival at the Site, to the Facilities (including spare parts therefore) and to the construction equipment to be provided by the Contractor or its Subcontractors.

| Amount<br>[in currency(ies)]                | Deductible limits<br>[in currency(ies)] | Parties insured<br>[names] | From<br>[place]                    | To<br>[place] |
|---|---|----------------------------|------------------------------------|---------------|
| 110% of total price for plant and equipment | (*)                                     | Contractor                 | Manufacturer place/cargo warehouse | Site Delivery |
|   |   |                            |                                    |               |

(\*) Excess 5% of claimed amount subject to minimum of NRs. 20,000 or its equivalent for Normal and NRs. 80,000 or its equivalent for act of God perils and collapse.

#### (b) Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the defect liability period while the Contractor is on the Site for the purpose of performing its obligations during the defect liability period.

| Amount<br>[in currency(ies)]                | Deductible limits<br>[in currency(ies)] | Parties insured<br>[names] | From<br>[place] | To<br>[place]    |
|---|---|----------------------------|-----------------|------------------|
| 110% of total price for plant and equipment | (*)                                     | Contractor                 | Site Delivery   | Final Acceptance |
|   |   |                            |                 |                  |

(\*) Excess 5% of claimed amount subject to minimum of NRs. 10,000 or its equivalent for Normal and NRs. 30,000 or its equivalent for testing period.

#### (c) Third Party Liability Insurance

Covering bodily injury or death suffered by third parties (including the Employer's personnel) and loss of or damage to property (including the Employer's property and any parts of the Facilities that have been accepted by the Employer) occurring in connection with the supply and installation of the Facilities.



| Amount<br>[in currency(ies)]                           | Deductible limits<br>[in currency(ies)] | Parties insured<br>[names] | From<br>[place]         | To<br>[place]       |
|--|---|----------------------------|-------------------------|---------------------|
| NRs. 1,000,000 or<br>its equivalent as in<br>(b) above |   | Contractor's<br>Employee   | Commencement<br>of work | Final<br>Acceptance |
| NRs. 1,000,000 or<br>its equivalent as in<br>(b) above |   | Third Party<br>Personnel   | Commencement<br>of work | Final<br>Acceptance |
| NRs. 1,000,000 or<br>its equivalent as in<br>(b) above |   | Employer's<br>Property     | Commencement<br>of work | Final<br>Acceptance |

**(d) Automobile Liability Insurance**

Covering use of all vehicles used by the Contractor or its Subcontractors (whether or not owned by them) in connection with the supply and installation of the Facilities. Comprehensive insurance in accordance with statutory requirements.

**(e) Workers' Compensation**

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

**(f) Employer's Liability**

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

**(B) Types of Insurance to Be Taken Out by the Employer (Not Applicable)**

The Employer shall at its expense take out and maintain in effect during the performance of the Contract the following insurance policies.

Details:

| Amount<br>[in currency(ies)] | Deductible limits<br>[in currency(ies)] | Parties insured<br>[names] | From<br>[place] | To<br>[place] |
|------------------------------|---|----------------------------|-----------------|---------------|
|                              |   |                            |                 |               |
|                              |   |                            |                 |               |

*Handwritten signature*



## Appendix 4 - Time Schedule

### 4.1 Description of Facilities: Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations

| Name of Facilities   | Completion Time required by the Employer from the Effective Date | Completion date guaranteed by the bidder from the Effective Date |
|--|--|--|
| Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations | Twenty Four (24) Months  |  |

- 4.2 The activity (ies) under the Contractor's programme for Project Completion shall be in the form of a master network (MNW) and shall identify the various activities like design, engineering, manufacturing, supply, installation, factory testing, transportation to site, site testing and commissioning, trial operation and Taking Over etc. of the Facilities or specific part thereof (where specific parts are specified in PC). The network shall conform to the above Project Completion Schedule. This master network will be discussed and agreed before Award in line with above, engineering drawing and data submission schedule shall also be discussed and finalized before Award.
- 4.3 The Employer reserves the right to request minor changes in the work schedule at the time of Award of Contract to the successful Bidder.
- 4.4 The successful Bidder shall be required to prepare detailed Network(s) and project implementation plans & programmes and finalize the same with the Employer as per the requirement specified in Technical Specifications, which shall form a part of the Contract. The detailed Network(s) and project implementation plans & programmes shall preferably be preferably prepared in Primavera or in MS Project or in the latest Project Management tool as convenient to Employer.



## Appendix 5 - List of Major Items of Plant and Services and List of Approved Subcontractors

A list of major items of plant and services is provided below.

The following Subcontractors and Manufacturers are approved for carrying out the item of the facilities indicated. Where more than one Subcontractor is listed, the Contractor is free to choose between them, but it must notify the Employer of its choice in good time prior to appointing any selected Subcontractor. In accordance with GCC Subclause 19.1, the Contractor is free to submit proposals for Subcontractors for additional items from time to time. No Subcontracts shall be placed with any such Subcontractors for additional items until the Subcontractors have been approved in writing by the Employer and their names have been added to this list of Approved Subcontractors.

| Major Items of Plant and Services | Approved Subcontractors and Manufacturers | Nationality |
|-----------------------------------|---|-------------|
|                                   |   |             |
|                                   |   |             |
|                                   |   |             |



## Appendix 6 - Scope of Works and Supply by the Employer

The following personnel, facilities, works, and supplies will be provided or supplied by the Employer, and the provisions of GCC Clauses 10, 21, and 24 shall apply as appropriate.

All personnel, facilities, works, and supplies will be provided by the Employer in good time so as not to delay the performance of the Contractor, in accordance with the approved Time Schedule and Program of Performance pursuant to GCC Subclause 18.2.

Unless otherwise indicated, all personnel, facilities, works, and supplies will be provided free of charge to the Contractor.

| Personnel | Charge to Contractor (if any) |
|-----------|-------------------------------|
|           |                               |
|           |                               |

| Facilities | Charge to Contractor (if any) |
|------------|-------------------------------|
|            |                               |
|            |                               |

| Works | Charge to Contractor (if any) |
|-------|-------------------------------|
|       |                               |
|       |                               |

| Supplies | Charge to Contractor (if any) |
|----------|-------------------------------|
|          |                               |
|          |                               |





## Appendix 7 - List of Documents for Approval or Review

Pursuant to GCC Subclause 20.3.1, the Contractor shall prepare, or cause its Subcontractor to prepare, and present to the Project Manager in accordance with the requirements of GCC Subclause 18.2 (Program of Performance), the following documents for

### (A) Approval

As mentioned in the relevant chapter/Section of the Technical Specifications of the Bidding documents and the following

1. Work Program (Detail Work Schedule)
2. Work Procedure
3. Manufacturers, prior to placing of order
4. Design, calculations and drawings of Plant & Equipments
5. All Civil design and drawings
6. ....
7. ....
- 8 Any other documents as desired by the Employer

### (B) Review

As mentioned in the relevant chapter/Section of the Technical Specifications of the Bidding documents and the following

1. Designed and calculation procedures for each component forming part of the Plant
2. Operations and maintenance instructions
3. Procedure for Test on Completion
4. Protection calculation / recalculation and setting.
5. Any other documents as desired by the Employer

#### Note:

Bidder shall furnish the exhaustive list, which shall be discussed and finalized for incorporation into the Contract Agreement.





## Appendix 8 - Functional Guarantees

### 8.1 Loss Capitalization

The transformer/reactor losses will be capitalized as follows for evaluation purpose:

| S.N. | Type of Losses   | Capitalization Rate (US\$ per kW) |                |
|------|------------------|-----------------------------------|----------------|
|      |                  | For Transformers                  | For Reactor    |
| 1    | No load losses   | 4684                              | Not Applicable |
| 2    | Load losses      | 1180                              | 1180           |
| 3    | Auxiliary Losses | 393                               | 393            |

### 8.2 Guaranteed Transformers/reactors losses.

The Guaranteed values of transformer/reactor loss are as follows:

| Required Functional Guarantee                         | Value of Functional Guarantee of the |                             |                                  |
|---|--------------------------------------|-----------------------------|----------------------------------|
|   | Proposed Plant and Equipment         |                             |                                  |
|   | No Load Loss (KW)                    | Load Loss ( KW) at 75 Deg C | Auxiliary Loss ( KW) at 75 Deg C |
| (1) 132/33 KV, 80/100 MVA, 3-Ph Power transformer     |                                      |                             |                                  |
| (2) 132/33 KV, 40/51.5/63 MVA, 3-Ph Power transformer |                                      |                             |                                  |
| (3) 132/11 KV, 31.5/45 MVA, 3-Ph Power transformer    |                                      |                             |                                  |
| (4) 33/11 KV, 20/24 MVA, 3-Ph Power transformer       |                                      |                             |                                  |

#### (i) Guaranteed values not reached.

If the individual losses of a transformer/reactors as measured during test exceeds the values guaranteed, then for each kilowatt of losses in excess of the losses guaranteed, an amount at the rates of twice the rates specified above for no-load losses, load-losses and Auxiliary Losses shall be deducted from the Contract Price of the successful Bidder.

#### (ii) Performance Guarantee

The performance figures quoted on Technical Data Sheet shall be guaranteed within the tolerances permitted by relevant standards listed under Part-II, Employer's Requirement, and shall become a part of the successful Bidder's Contract. In case of loss capitalization, no tolerance shall be permitted for the



guaranteed value. The transformer/reactor will be rejected, if the measured no-load, load and Auxiliary Losses exceed the guaranteed value by over 15% provided that the total losses do not exceed 10% as specified.



## Performance Security

.....*Bank's Name, and Address of Issuing Branch or Office* .....

**Beneficiary:** .....*Name and Address of Employer* .....

**Date:** .....

**Performance Guarantee No.:** .....

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

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

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

This guarantee shall expire, no later than the ..... Day of ..... \*\*, and any demand for payment under it must be received by us at this office on or before that date.

.....

*Seal of Bank and Signature(s)*

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

*\* The Guarantor shall insert an amount representing the percentage of the Contract Price specified in the Contract in Nepalese Rupees.*

*\*\* Insert the date thirty days after the end of Defect Notification Period. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee".*



## Letter of Commitment for Bank's Undertaking for Line of Credit

**Bank's Name, and Address of Issuing Branch or Office**  
**(On Letter head of the Commercial bank or any Financial Institution eligible to issue Bank**  
**Guarantee as per prevailing Law)**

Date:

Contract No:

Name of Contract:

To:

**[Name and address of the Employer]**

**CREDIT COMMITMENT No: [insert number]**

We are pleased to know that [name of Contractor] (hereinafter called "the Contractor") has been awarded the Contract for the execution of the Works of **[description of works]** for above contract.

Furthermore, we understand that, according to your conditions, the Contractor's Financial Capacity i.e. Liquid Asset must be substantiated by a Letter of Commitment of Bank's Undertaking for Line of Credit.

At the request of, and arrangement with, the Contractor, we [name and address of the Bank] do hereby agree and undertake that [name and address of the Contractor] will be provided by us with a revolving line of credit, for execution of the Works viz. [insert name of the works], for an amount not less than NRs .....[in figure] ( in words) for the sole purpose of the execution of the above Contract. This Revolving Line of Credit will be maintained by us until **[Insert "Initial Contract Period"]** months by the Procuring Entity.

This committed line of credit shall not be terminated or cancelled without the prior written approval of Employer.

In witness whereof, authorised representative of the Bank has hereunto signed and sealed this Letter of Commitment.

Signature

Name:

Designation:

Signature

Name:

Designation:



## Advance Payment Security

(On letterhead paper of the Commercial Bank or Financial Institution eligible to issue Bank Guarantee as per prevailing Law)

Bank's Name, and Address of Issuing Branch or Office

Beneficiary: Name and Address of Employer

Date:

Advance Payment Guarantee No.:

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

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

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

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

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that eighty (80) percent of the Contract Price has been certified for payment, or on the . . . day of . . . . . , . . . . . \*\*, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

.....

Seal of Bank and Signature(s)

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

\* The Guarantor shall insert an amount representing the amount of the advance payment in Nepalese Rupees of the advance payment as specified in the Contract.

\*\* Insert the date Thirty days after the expected completion date. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee".



# NEPAL ELECTRICITY AUTHORITY

(An Undertaking of Government of Nepal)

**TRANSMISSION DIRECTORATE**

**GRID OPERATION DEPARTMENT**



## **BID DOCUMENT**

### **INTERNATIONAL COMPETITIVE BIDDING (ICB)**

(GENERAL TECHNICAL SPECIFICATIONS, TECHNICAL DATA SHEET)

### **VOLUME –II OF III**

SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING  
OF  
POWER TRANSFORMERS AT VARIOUS  
SUBSTATIONS

**TENDER NO: GOD/2078/079-14**

---

Nepal Electricity Authority  
Grid Operation Department  
Meen Bhawan, New Baneshwor  
Kathmandu  
Tel. : + 977 (01) 4106919, 4106782, 4106965  
Email: [gridoperation@nea.org.np](mailto:gridoperation@nea.org.np)

APRIL 2022



## **Table of Contents**

|  |                 |
|--|-----------------|
| <b>Section 1- General Technical Specifications (GTS)</b> | <b>-----166</b> |
| <b>Section 2- Technical Data Sheet (TDS)</b>             | <b>----- 87</b> |
| <b>Total Number of Pages</b>                             | <b>-----253</b> |



## SECTION-I, PART 1 GENERAL TECHNICAL SPECIFICATION



## SECTION-I, PART-1

### GENERAL TECHNICAL SPECIFICATION

#### 1.0 GENERAL SCOPE OF WORK:

Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations.

#### Background:

A.1 The NEA wishes to invite the Bid for the following Works.

##### Package 1

Supply, Delivery, Installation, Testing and Commissioning of 2 nos. of 132/33kV, 100MVA Power Transformers at Kohalpur Substation replacing the existing 2x63MVA Transformers.

Supply, Delivery, Installation, Testing and Commissioning of 2 nos. of 33/11kV, 24MVA Power Transformers at Kohalpur Substation replacing the existing 2x16.6MVA Transformers.

At present there are two nos. of 132/33kV, 63MVA and two nos. of 33/11kV, 16.6MVA Power Transformers at Kohalpur Substation.

##### Package 2

Shifting, Installation, Testing and Commissioning of 2 nos. of 132/33kV, 30MVA Power Transformers from Attaria Substation to Lamki Substation replacing the existing 2x15MVA Transformers.

At present there are two nos. of 132/33kV, 15MVA Power Transformers at Lamki Substation.

##### Package 3

Supply, Delivery, Installation, Testing and Commissioning of 2 no. of 132/11kV, 45MVA Power Transformers at Pokhara Substation replacing the existing 2x30MVA Transformer.

At present there are two no. of 132/11kV, 30MVA Power Transformers at Pokhara Substation.

##### Package 4

Shifting, Installation, Testing and Commissioning of 2 nos. of 132/11kV, 30MVA Power Transformers from Pokhara Substation to Bharatpur Substation replacing the existing 2x22.5MVA Transformers.

Shifting, Installation, Testing and Commissioning of 1 nos. of 132/11kV, 22.5MVA Power Transformer from Bharatpur Substation to Lekhnath Substation.



At present there are two nos. of 132/11kV, 22.5MVA Power Transformers at Bharatpur Substation and Shifting, Installation, Testing and Commissioning of 1 nos of 132/11kV, 22.5MVA Power Transformer from Bharatpur Substation to Lekhnath Substation Lekhnath Substation.

#### **Package 5**

Supply, Delivery, Installation, Testing and Commissioning of 2 no. of 33/11kV, 24MVA Power Transformers at Lahan Substation and replacing the existing 2x16.6MVA Transformer.

At present there are two no. of 33/11kV, 16.6MVA Power Transformer at Lahan Substation.

#### **Package 6**

Supply, Delivery, Installation, Testing and Commissioning of 2 no. of 132/33kV, 100MVA Power Transformers at Dhalkebar Substation.

At present there are two nos. of 132/33kV, 63MVA Power Transformers at Dhalkebar Substation.

#### **Package 7**

Shifting, Installation, Testing and Commissioning of 1 no. of 33/11kV, 16.6MVA Power Transformer Bay at Chapur Substation. Spare 16.6MVA Power Transformer from Lahan Substation is to be shifted and installed in the new Bay.

At present there are one no. of 33/11kV, 16.6MVA Power Transformer at Chapur Substation.

#### **Package 8**

Shifting, Installation, Testing and Commissioning of 1 no. of 132/33kV, 63MVA Power Transformer from Kohalpur Substation to Chanauta Substation and replacing the existing 30MVA Transformer.

At present there are 2 no. of 132/33kV, 30MVA Power Transformers at Chanauta Substation.

#### **Package 9**

Supply, Delivery, Installation, Testing and Commissioning of 2 no. of 33/11kV, 24MVA Power Transformer at Butwal Substation replacing the existing 2x16.6MVA Transformer.

At present there are 1 no. of 33/11kV, 24MVA and 2 nos. of 33/11kV, 16.6MVA Power Transformers at Butwal Substation.

#### **Package 10**



Supply, Delivery, Installation, Testing and Commissioning of 2 nos. of 132/33kV, 63MVA Power Transformers at Gandak Substation replacing 2x30MVA Transformer.

At present there are one no. of 132/33kV, 30MVA Power Transformer at Gandak Substation. There is ongoing project for the construction of 132/33kV Power Transformer Bay with installation of 30MVA Power Transformer at Gandak Substation.

#### **Package 11**

Shifting, Installation, Testing and Commissioning of 1 no. of 132/33kV, 63MVA Power Transformer from Kohalpur Substation to Kawasoti Substation replacing the existing 30MVA Transformer

Supply, Delivery, Installation, Testing and Commissioning of 1 no. of 33/11kV, 16.6MVA Power Transformer Bay at Kawasoti Substation Spare 16.6MVA Power Transformer from Butwal Substation is to be shifted and installed in the new Bay.

At present there are two no. of 132/33kV, 30MVA and one no. of 33/11kV, 16.6MVA Power Transformers at Kawasoti Substation.

#### **Package 12**

Shifting, Installation, Testing and Commissioning of 2 nos. of 132/33kV, 63MVA Power Transformers from Dhalkebar Substation to Piluwa Substation.

Supply, Delivery, Installation, Testing and Commissioning of 1 no. of 132/33kV New Power Transformer Bay.

At present there are one no. of 132/33kV, 30MVA Power Transformer at Piluwa Substation.

#### **Package 13**

Shifting, Installation, Testing and Commissioning of 2 nos. of 132/11kV, 22.5MVA Power Transformer Bay at Kamane Substation. Spare 2x22.5MVA Power Transformer from Bhaktapur Substation is to be shifted and installed in the new Bay.

At present there are 132/33kV, one no. of 30MVA & one no. of 63MVA Power Transformers and one no. of 33/11kV, 16.6MVA Power Transformers at Kamane Substation.

- A.2 The Equipment supplied shall confirm, in all respects to the high standards of Engineering design and workmanship and be capable of performing in continuous commercial operation in a manner acceptable to the owner who can interpret the meaning of specifications and shall have the power to reject any work or material, which in his judgment are not in full accordance therewith.

#### **Scope of work:**



*[Handwritten signature]*



The scope of work under this Tender covers, as per specification as mentioned in the Technical Proposal. Any Omission in the Specification for the items that are necessary for the completion of the work shall be clearly mentioned in the Technical proposal by the Bidder. **If the Bidder fails to mention the omission, it will be assumed that any minor items not present in the specification or price schedule but necessary for the completion of the work were included in the quoted price by the Bidder. The Bidder in such case, will not be liable for any claims.**

## Supply & Commissioning Works

### Package 1 (Transformer Upgradation at Kohalpur Substation)

- 1.1 Design, Manufacture, Supply, Delivery, Installation, Testing and Commissioning of 132/33kV, 80/100MVA Power Transformers with OLTC, RTCC facility, LA mounted on LV side and Bushing CT complete with all accessories as specified 2 Sets
- 1.2 Design, Manufacture, Supply, Delivery, Installation, Testing and Commissioning of 33/11kV, 20/24MVA Power Transformers with OLTC, RTCC facility, LA mounted on HV & LV side and Bushing CT complete with all accessories as specified 2 Sets
- 1.3 Supply, Delivery, Installation, Testing and Commissioning of 132kV SF6 Circuit Breaker with all accessories, as specified. 1 Set
- 1.4 Supply, Delivery, Installation, Testing and Commissioning of 33kV Vacuum Circuit Breaker with all accessories, as specified. 2 Sets
- 1.5 Supply, Delivery, Installation, Testing and Commissioning of 33kV Disconnecting Switch with Earthing Switch with all accessories, as specified. 2 Sets
- 1.6 Supply, Delivery, Installation, Testing and Commissioning of 33kV Current Transformer with all accessories, as specified. 6 Nos
- 1.7 Supply, Delivery, Installation, Testing and Commissioning of 30kV Lightning Arrestor with all accessories, as specified. 6 Nos
- 1.8 Supply, Delivery, Installation, Testing and Commissioning of 33kV Line Control & Relay Panel with all accessories, as specified. 6 Sets
- 1.9 Supply, Delivery, Installation, Testing and Commissioning of 33kV, 630sq.mm single core XLPE Copper Power Cable including terminal joints for both ends with all accessories, as specified. 1200 m
- 1.10 Supply, Delivery, Installation, Testing and Commissioning of 11kV, 630sq.mm single core XLPE Copper Power Cable including terminal joints for both ends with all accessories, as specified. 2500 m
- 1.11 Supply, Delivery, Installation, Testing and Commissioning of 11kV, 300sq.mm three core XLPE Aluminium Power Cable including terminal joints for both ends with all accessories, as specified. 1500 m
- 1.12 600V control cable and power cable required to complete the scope of work as specified. 2 Lots



*[Handwritten Signature]*



- 1.13 Supply, Delivery, Installation, Testing and Commissioning of miscellaneous materials, grounding materials etc.
- 1.14 All accessories and auxiliary equipment required for the successful operation.
- 1.15 Spare Parts as per the Bill of Quantity

#### Operational Requirement

- 1.16 Dimensions and colors of the new equipment should be as per the existing equipments.
- 1.17 All control signals and indications facilities of the existing equipments shall be properly provided in the panels.
- 1.18 The new system shall be suitably and properly integrated with the existing system for proper functioning.

#### Civil Works / Steel Structure

- 1.19 The scope of works includes all the civil work such as supply of new structures, construction of new foundations or modification of foundation for all equipments as specified.
- 1.20 Clearing and striping, Site grading, Leveling, Crushed Rock Surfacing for Switchyard, Exploration Works like Laboratory Test, Soil Test, Resistivity Test and construction of new Cable Trench, Duct Bank, Conduit, Hand Hole, Cable Tray etc.
- 1.21 Steel Structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories.
- 1.22 Dismantling and Removal works of existing 2 nos. of 132/33kV 63MVA Power Transformers, 2 nos. of 33/11kV 16.6MVA Power Transformers and other equipments as required to complete the scope of works.

#### Package 2 (Transformer Upgradation at Lamki Substation)

- 2.1 Shifting, Installation, Testing and Commissioning of 132/33kV, 30MVA Power Transformers with RTCC Panel and all accessories as specified from Attaria Substation to Lamki Substation 2 Sets
- 2.2 Supply, Delivery, Installation, Testing and Commissioning of 132kV SF6 Circuit Breaker with all accessories, as specified. 1 Set
- 2.3 Supply, Delivery, Installation, Testing and Commissioning of 33kV Vacuum Circuit Breaker with all accessories, as specified. 1 Set
- 2.4 Supply, Delivery, Installation, Testing and Commissioning of 33kV Disconnecting Switch with Earthing Switch with all accessories, as specified. 3 Sets



*[Handwritten Signature]*



- 2.5 Supply, Delivery, Installation, Testing and Commissioning of 33kV Current Transformer with all accessories, as specified. 3 Nos
- 2.6 Supply, Delivery, Installation, Testing and Commissioning of 30kV Lightning Arrestor with all accessories, as specified. 6 Nos
- 2.7 Supply, Delivery, Installation, Testing and Commissioning of 33kV, 630sq.mm single core XLPE Copper Power Cable including terminal joints for both ends with all accessories, as specified. 750 m
- 2.8 Supply, Delivery, Installation, Testing and Commissioning of 11kV, 300sq.mm three core XLPE Aluminium Power Cable including terminal joints for both ends with all accessories, as specified. 1800 m
- 2.9 33 kV, 50 sq. mm Three core XLPE Copper Power Cable including 6 terminal Joints for both end with all accessories complete for 33 kV Side 100 m
- 2.10 Installation, Testing and Commissioning of 33/0.4kV, 100kVA Distribution Transformer complete with channels, clamps and all accessories, as specified. 1 Set
- 2.11 600V control cable and power cable required to complete the scope of work as specified. 1 Lot
- 2.12 Supply, Delivery, Installation, Testing and Commissioning of miscellaneous materials, grounding materials etc.
- 2.13 All accessories and auxiliary equipment required for the successful operation.
- 2.14 Spare Parts as per the Bill of Quantity

#### Operational Requirement

- 2.15 Dimensions and colors of the new equipment should be as per the existing equipments.
- 2.16 All control signals and indications facilities of the existing equipments shall be properly provided in the panels.
- 2.17 The new system shall be suitably and properly integrated with the existing system for proper functioning.

#### Civil Works / Steel Structure

- 2.18 The scope of works includes all the civil work such as supply of new structures, construction of new foundations or modification of foundation for all equipments as specified.
- 2.19 Clearing and striping, Site grading, Leveling, Crushed Rock Surfacing for Switchyard, Exploration Works like Laboratory Test, Soil Test, Resistivity Test and construction of new Cable Trench, Duct Bank, Conduit, Hand Hole, Cable Tray etc.



*[Handwritten Signature]*





- 2.20 Steel Structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories.
- 2.21 Dismantling and Removal works of existing 2 nos. of 132/33kV 15MVA Power Transformers and other equipments as required to complete the scope of works.

**Package 3 (Transformer Upgradation at Pokhara Substation)**

- 3.1 Design, Manufacture, Supply, Delivery, Installation, Testing and Commissioning of 132/11kV, 31.5/45MVA Power Transformers with OLTC, RTCC facility, LA mounted on LV side and Bushing CT complete with all accessories as specified 2 Sets
- 3.2 Supply, Delivery, Installation, Testing and Commissioning of 132kV SF6 Circuit Breaker with all accessories, as specified. 1 Set
- 3.3 Supply, Delivery, Installation, Testing and Commissioning of 11kV Vacuum Circuit Breaker Switchgear Panel with all accessories, as specified.
  - Incomer Panel 2 Sets
  - Outgoing Panel 4 Sets
- 3.4 600V control cable and power cable required to complete the scope of work as specified. 1 Lot
- 3.5 Supply, Delivery, Installation, Testing and Commissioning of miscellaneous materials, grounding materials etc.
- 3.6 All accessories and auxiliary equipment required for the successful operation.
- 3.7 Spare Parts as per the Bill of Quantity

**Operational Requirement**

- 3.8 Dimensions and colors of the new equipment should be as per the existing equipments.
- 3.9 All control signals and indications facilities of the existing equipments shall be properly provided in the panels.
- 3.10 The new system shall be suitably and properly integrated with the existing system for proper functioning.

**Civil Works / Steel Structure**

- 3.11 The scope of works includes all the civil work such as supply of new structures, construction of new foundations or modification of foundation for all equipments as specified.
- 3.12 Clearing and striping, Site grading, Leveling, Crushed Rock Surfacing for Switchyard, Exploration Works like Laboratory Test, Soil Test, Resistivity Test and construction of new Cable Trench, Duct Bank, Conduit, Hand Hole, Cable Tray etc.



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- 3.13 Steel Structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories.
- 3.14 Dismantling and Removal works of existing 2 no. of 132/11kV 30MVA Power Transformers and other equipments as required to complete the scope of works.

**Package 4 (Transformer Shifting)**

- 4.1 Shifting, Installation, Testing and Commissioning of 132/11kV, 30MVA Power Transformers with RTCC Panel and all accessories as specified from Pokhara Substation to Bharatpur Substation 2 Sets
- 4.2 Shifting, Installation, Testing and Commissioning of 132/11kV, 22.5MVA Power Transformer with RTCC Panel and all accessories as specified from Bharatpur Substation to Lekhnath Substation 1 Set
- 4.3 All accessories and auxiliary equipment required for the successful operation.
- 4.4 Spare Parts as per the Bill of Quantity

**Operational Requirement**

- 4.5 Dimensions and colors of the new equipment should be as per the existing equipments.
- 4.6 All control signals and indications facilities of the existing equipments shall be properly provided in the panels.
- 4.7 The new system shall be suitably and properly integrated with the existing system for proper functioning.

**Civil Works / Steel Structure**

- 4.8 The scope of works includes all the civil work such as supply of new structures, construction of new foundations or modification of foundation for all equipments as specified.
- 4.9 Clearing and striping, Site grading, Leveling, Crushed Rock Surfacing for Switchyard, Exploration Works like Laboratory Test, Soil Test, Resistivity Test and construction of new Cable Trench, Duct Bank, Conduit, Hand Hole, Cable Tray etc.
- 4.10 Steel Structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories.
- 4.11 Dismantling and Removal works of existing 2 nos. of 132/11kV 22.5MVA Power Transformers.

**Package 5 (Transformer Upgradation at Lahan Substation)**

- 5.1 Design, Manufacture, Supply, Delivery, Installation, Testing and Commissioning of 33/11kV, 20/24MVA Power Transformers with OLTC, RTCC facility, LA mounted on HV & LV side and Bushing CT complete with all accessories as specified 2 Sets



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- 5.2 Supply, Delivery, Installation, Testing and Commissioning of 33kV Current Transformer with all accessories, as specified. 6 Nos
- 5.3 Supply, Delivery, Installation, Testing and Commissioning of 11kV Current Transformer with all accessories, as specified. 6 Nos
- 5.4 Supply, Delivery, Installation, Testing and Commissioning of 11kV, 630sq.mm Single Core XLPE Copper Power Cable including terminal joints for both ends with all accessories and Steel Structure, as specified. 1800 m
- 5.5 600V control cable and power cable required to complete the scope of work as specified. 2 Lot
- 5.6 Supply, Delivery, Installation, Testing and Commissioning of miscellaneous materials, grounding materials etc.
- 5.7 All accessories and auxiliary equipment required for the successful operation.
- 5.8 Spare Parts as per the Bill of Quantity

#### Operational Requirement

- 5.9 Dimensions and colors of the new equipment should be as per the existing equipments.
- 5.10 All control signals and indications facilities of the existing equipments shall be properly provided in the panels.
- 5.11 The new system shall be suitably and properly integrated with the existing system for proper functioning.

#### Civil Works / Steel Structure

- 5.12 The scope of works includes all the civil work such as supply of new structures, construction of new foundations or modification of foundation for all equipments as specified.
- 5.13 Clearing and striping, Site grading, Leveling, Crushed Rock Surfacing for Switchyard, Exploration Works like Laboratory Test, Soil Test, Resistivity Test and construction of new Cable Trench, Duct Bank, Conduit, Hand Hole, Cable Tray etc.
- 5.14 Steel Structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories.
- 5.15 Dismantling and Removal works of existing 2 nos. of 33/11kV 16.6MVA Power Transformer and other equipments as required to complete the scope of works.

#### Package 6 (Transformer Upgradation at Dhalkebar Substation)



*[Handwritten Signature]*



- 6.1 Design, Manufacture, Supply, Delivery, Installation, Testing and Commissioning of 132/33kV, 80/100MVA Power Transformers with OLTC, RTCC facility, LA mounted on LV side and Bushing CT complete with all accessories as specified 2 Sets
- 6.2 Supply, Delivery, Installation, Testing and Commissioning of 33kV Vacuum Circuit Breaker with all accessories and Steel Structure, as specified. 2 Sets
- 6.3 Supply, Delivery, Installation, Testing and Commissioning of 33kV Disconnecting Switch without Earthing Switch with all accessories, as specified. 2 Sets
- 6.4 Supply, Delivery, Installation, Testing and Commissioning of 33kV Disconnecting Switch with Earthing Switch with all accessories, as specified. 2 Sets
- 6.5 Supply, Delivery, Installation, Testing and Commissioning of 33kV Current Transformer with all accessories and Steel Structure, as specified. 6 Nos
- 6.6 600V control cable and power cable required to complete the scope of work as specified. 1 Lot
- 6.7 Tubular Bus of Suitable size for 33kV Bus including Connectors and all other accessories and hardwares. 1 Lot
- 6.8 Adaptation Work for Bus Bar protection.
- 6.9 All accessories and auxiliary equipment required for the successful operation.
- 6.10 Spare Parts as per the Bill of Quantity

#### Operational Requirement

- 6.11 Dimensions and colors of the new equipment should be as per the existing equipments.
- 6.12 All control signals and indications facilities of the existing equipments shall be properly provided in the panels.
- 6.13 The new system shall be suitably and properly integrated with the existing system for proper functioning.

#### Civil Works / Steel Structure

- 6.14 The scope of works includes all the civil work such as supply of new structures, construction of new foundations or modification of foundation for all equipments as specified.
- 6.15 Clearing and striping, Site grading, Leveling, Crushed Rock Surfacing for Switchyard, Exploration Works like Laboratory Test, Soil Test, Resistivity Test and construction of new Cable Trench, Duct Bank, Conduit, Hand Hole, Cable Tray etc.
- 6.16 Steel Structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories.



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- 6.17 Dismantling and Removal works of existing 2 nos. of 132/33kV 63MVA Power Transformer and other equipments as required to complete the scope of works.

**Package 7 (New Transformer Bay at Chapur Substation)**

- 7.1 Shifting, Installation, Testing and Commissioning of 33/11kV, 16.6MVA Power Transformer with RTCC Panel and all accessories as specified from Lahan Substation to Chapur Substation 1 Sets
- 7.2 Supply, Delivery, Installation, Testing and Commissioning of 33kV Current Transformer with all accessories, as specified. 6 Nos
- 7.3 Supply, Delivery, Installation, Testing and Commissioning of 33/11kV Transformer Control & Relay Panel with all accessories, as specified. 1 Set
- 7.4 Supply, Delivery, Installation, Testing and Commissioning of 33kV Vacuum Circuit Breaker with all accessories and Steel Structure, as specified. 1 Set
- 7.5 Supply, Delivery, Installation, Testing and Commissioning of 33kV Disconnecting Switch without Earthing Switch with all accessories, as specified. 1 Set
- 7.6 Supply, Delivery, Installation, Testing and Commissioning of 33kV Disconnecting Switch with Earthing Switch with all accessories, as specified. 1 Set
- 7.7 Supply, Delivery, Installation, Testing and Commissioning of 11kV, 630sq.mm Single Core XLPE Copper Power Cable including terminal joints for both ends with all accessories and Steel Structure, as specified. 900 m
- 7.8 Supply, Delivery, Installation, Testing and Commissioning of 11kV Vacuum Circuit Breaker Switchgear Panel with all accessories, as specified.  
Incomer Panel 1 Set  
Outgoing Panel 4 Sets  
Bus Coupler Panel 1 Set
- 7.9 600V control cable and power cable required to complete the scope of work as specified. 1 Lot
- 7.10 Supply, Delivery, Installation, Testing and Commissioning of miscellaneous materials, grounding materials etc.
- 7.11 All accessories and auxiliary equipment required for the successful operation.
- 7.12 Spare Parts as per the Bill of Quantity

**Operational Requirement**

- 7.13 Dimensions and colors of the new equipment should be as per the existing equipments.
- 7.14 All control signals and indications facilities of the existing equipments shall be properly provided in the panels.



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- 7.15 The new system shall be suitably and properly integrated with the existing system for proper functioning.

Civil Works / Steel Structure

- 7.16 The scope of works includes all the civil work such as supply of new structures, construction of new foundations or modification of foundation for all equipments as specified.
- 7.17 Clearing and striping, Site grading, Leveling, Crushed Rock Surfacing for Switchyard, Exploration Works like Laboratory Test, Soil Test, Resistivity Test and construction of new Cable Trench, Duct Bank, Conduit, Hand Hole, Cable Tray etc.
- 7.18 Steel Structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories.

**Package 8 (Transformer Upgradation at Chanauta Substation)**

- 8.1 Shifting, Installation, Testing and Commissioning of 132/33kV, 63MVA Power Transformer with RTCC Panel and all accessories as specified from Kohalpur Substation to Chanauta Substation 1 Set
- 8.2 Supply, Delivery, Installation, Testing and Commissioning of 132kV Current Transformer with all accessories and Steel Structure, as specified. 3 Nos
- 8.3 Supply, Delivery, Installation, Testing and Commissioning of 33kV Current Transformer with all accessories and Steel Structure, as specified. 3 Nos
- 8.4 600V control cable and power cable required to complete the scope of work as specified. 1 Lot
- 8.5 Supply, Delivery, Installation, Testing and Commissioning of miscellaneous materials, grounding materials etc.
- 8.6 All accessories and auxiliary equipment required for the successful operation.

Operational Requirement

- 8.7 Dimensions and colors of the new equipment should be as per the existing equipments.
- 8.8 All control signals and indications facilities of the existing equipments shall be properly provided in the panels.
- 8.9 The new system shall be suitably and properly integrated with the existing system for proper functioning.

Civil Works / Steel Structure



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- 8.10 The scope of works includes all the civil work such as supply of new structures, construction of new foundations or modification of foundation for all equipments as specified.
- 8.11 Clearing and striping, Site grading, Leveling, Crushed Rock Surfacing for Switchyard, Exploration Works like Laboratory Test, Soil Test, Resistivity Test and construction of new Cable Trench, Duct Bank, Conduit, Hand Hole, Cable Tray etc.
- 8.12 Steel Structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories.
- 8.13 Dismantling and Removal works of existing 1 no. of 132/33kV 30MVA Power Transformer and other equipments as required to complete the scope of works.

**Package 9 (Transformer Upgradation at Butwal Substation)**

- 9.1 Design, Manufacture, Supply, Delivery, Installation, Testing and Commissioning of 33/11kV, 20/24MVA Power Transformers with OLTC, RTCC facility, LA mounted on HV and LV side and Bushing CT complete with all accessories as specified 2 Sets
- 9.2 Supply, Delivery, Installation, Testing and Commissioning of 33kV Current Transformer with all accessories and Steel Structure, as specified. 6 Nos
- 9.3 Supply, Delivery, Installation, Testing and Commissioning of 11kV Current Transformer with all accessories, as specified. 6 Nos
- 9.4 Supply, Delivery, Installation, Testing and Commissioning of 11kV, 630sq.mm XLPE Copper Power Cable including terminal joints for both ends with all accessories and Steel Structure, as specified. 2400 m
- 9.5 600V control cable and power cable required to complete the scope of work as specified. 2 Lot
- 9.6 Supply, Delivery, Installation, Testing and Commissioning of miscellaneous materials, grounding materials etc.
- 9.7 All accessories and auxiliary equipment required for the successful operation.
- 9.8 Spare Parts as per the Bill of Quantity

**Operational Requirement**

- 9.9 Dimensions and colors of the new equipment should be as per the existing equipments.
- 9.10 All control signals and indications facilities of the existing equipments shall be properly provided in the panels.
- 9.11 The new system shall be suitably and properly integrated with the existing system for proper functioning.



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## Civil Works / Steel Structure

- 9.12 The scope of works includes all the civil work such as supply of new structures, construction of new foundations or modification of foundation for all equipments as specified.
- 9.13 Clearing and striping, Site grading, Leveling, Crushed Rock Surfacing for Switchyard, Exploration Works like Laboratory Test, Soil Test, Resistivity Test and construction of new Cable Trench, Duct Bank, Conduit, Hand Hole, Cable Tray etc.
- 9.14 Steel Structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories.
- 9.15 Dismantling and Removal works of existing 2 nos. of 33/11kV 16.6MVA Power Transformers and other equipments as required to complete the scope of works.

## Package 10 (Transformer Upgradation at Gandak Substation)

- 10.1 Design, Manufacture, Supply, Delivery, Installation, Testing and Commissioning of 132/33kV, 40/51.5/63MVA Power Transformers with OLTC, RTCC facility, LA mounted on LV side and Bushing CT complete with all accessories as specified 2 Set
- 10.2 Supply, Delivery, Installation, Testing and Commissioning of 132kV Current Transformer with all accessories, as specified. 6 Nos
- 10.3 Supply, Delivery, Installation, Testing and Commissioning of 33kV Current Transformer with all accessories, as specified. 6 Nos
- 10.4 600V control cable and power cable required to complete the scope of work as specified. 2 Lot
- 10.5 Supply, Delivery, Installation, Testing and Commissioning of miscellaneous materials, grounding materials etc.
- 10.6 All accessories and auxiliary equipment required for the successful operation.
- 10.7 Spare Parts as per the Bill of Quantity

## Operational Requirement

- 10.8 Dimensions and colors of the new equipment should be as per the existing equipments.
- 10.9 All control signals and indications facilities of the existing equipments shall be properly provided in the panels.
- 10.10 The new system shall be suitably and properly integrated with the existing system for proper functioning.

## Civil Works / Steel Structure



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- 10.11 The scope of works includes all the civil work such as supply of new structures, construction of new foundations or modification of foundation for all equipments as specified.
- 10.12 Clearing and striping, Site grading, Leveling, Crushed Rock Surfacing for Switchyard, Exploration Works like Laboratory Test, Soil Test, Resistivity Test and construction of new Cable Trench, Duct Bank, Conduit, Hand Hole, Cable Tray etc.
- 10.13 Steel Structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories.
- 10.14 Dismantling and Removal works of existing 2 nos. of 132/33kV 30MVA Power Transformers and other equipments as required to complete the scope of works.

**Package 11 (Transformer Upgradation and New Transformer Bay at Kawasoti Substation)**

- 11.1 Shifting, Installation, Testing and Commissioning of 132/33kV, 63MVA Power Transformer with RTCC Panel and all accessories as specified from Kohalpur Substation to Kawasoti Substation 1 Set
- 11.2 Shifting, Installation, Testing and Commissioning of 33/11kV, 16.6MVA Power Transformer with RTCC Panel and all accessories as specified from Butwal Substation to Kawasoti Substation 1 Set
- 11.3 Supply, Delivery, Installation, Testing and Commissioning of 132kV Current Transformer with all accessories, as specified. 3 Nos
- 11.4 Supply, Delivery, Installation, Testing and Commissioning of 33kV Current Transformer with all accessories, as specified. 6 Nos
- 11.5 Supply, Delivery, Installation, Testing and Commissioning of 33kV Vacuum Circuit Breaker with all accessories and Steel Structure, as specified. 1 Set
- 11.6 Supply, Delivery, Installation, Testing and Commissioning of 33kV Disconnecting Switch without Earthing Switch with all accessories and Steel Structure, as specified. 1 Set
- 11.7 Supply, Delivery, Installation, Testing and Commissioning of 33kV Disconnecting Switch with Earthing Switch with all accessories and Steel Structure, as specified. 1 Set
- 11.8 Supply, Delivery, Installation, Testing and Commissioning of 33kV Potential Transformer with all accessories, as specified. 3 Nos
- 11.9 Supply, Delivery, Installation, Testing and Commissioning of 33/11kV Transformer Control & Relay Panel with all accessories, as specified. 1 Set
- 11.10 Supply, Delivery, Installation, Testing and Commissioning of 11kV, 630sq.mm XLPE Copper Power Cable including terminal joints for both ends with all accessories and Steel Structure, as specified. 600 m
- 11.11 Supply, Delivery, Installation, Testing and Commissioning of 11kV Vacuum Circuit Breaker Switchgear Panel with all accessories, as specified.



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|                   |        |
|-------------------|--------|
| Incomer Panel     | 1 Set  |
| Outgoing Panel    | 2 Sets |
| Bus Coupler Panel | 1 Set  |
| Trunking Chamber  | 1 Set  |

- 11.12 600V control cable and power cable required to complete the scope of work as specified.  
1 Lot
- 11.13 Supply, Delivery, Installation, Testing and Commissioning of miscellaneous materials, grounding materials etc.
- 11.14 All accessories and auxiliary equipment required for the successful operation.
- 11.15 Spare Parts as per the Bill of Quantity

#### Operational Requirement

- 11.16 Dimensions and colors of the new equipment should be as per the existing equipments.
- 11.17 All control signals and indications facilities of the existing equipments shall be properly provided in the panels.
- 11.18 The new system shall be suitably and properly integrated with the existing system for proper functioning.

#### Civil Works / Steel Structure

- 11.19 The scope of works includes all the civil work such as supply of new structures, construction of new foundations or modification of foundation for all equipments as specified.
- 11.20 Clearing and striping, Site grading, Leveling, Crushed Rock Surfacing for Switchyard, Exploration Works like Laboratory Test, Soil Test, Resistivity Test and construction of new Cable Trench, Duct Bank, Conduit, Hand Hole, Cable Tray etc.
- 11.21 Steel Structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories.
- 11.22 Dismantling and Removal works of existing 1 nos. of 132/33kV 30MVA Power Transformer and other equipments as required to complete the scope of works.

#### Package 12 (Transformer Upgradation at Piluwa Substation)

- 12.1 Shifting, Installation, Testing and Commissioning of 132/33kV, 63MVA Power Transformer with RTCC Panel and all accessories as specified from Dhalkebar Substation to Piluwa Substation  
2 Sets
- 12.2 Supply, Delivery, Installation, Testing and Commissioning of 132kV SF6 Circuit Breaker with all accessories and Steel Structure, as specified.  
1 Set



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- 12.3 Supply, Delivery, Installation, Testing and Commissioning of 132kV Disconnecting Switch without Earthing Switch with all accessories, as specified. 2 Sets
- 12.4 Supply, Delivery, Installation, Testing and Commissioning of 132kV Current Transformer with all accessories, as specified. 3 Nos
- 12.5 Supply, Delivery, Installation, Testing and Commissioning of 132/33kV Transformer Control & Relay Panel with all accessories, as specified. 1 Set
- 12.6 Supply, Delivery, Installation, Testing and Commissioning of 132kV Lightning Arrestor with all accessories, as specified. 3 Nos
- 12.7 Supply, Delivery, Installation, Testing and Commissioning of 33kV Line Control & Relay Panel with all accessories, as specified. 3 Sets
- 12.8 Supply, Delivery, Installation, Testing and Commissioning of 33kV Vacuum Circuit Breaker with all accessories and Steel Structure, as specified. 4 Sets
- 12.9 Supply, Delivery, Installation, Testing and Commissioning of 33kV Disconnecting Switch without Earthing Switch with all accessories, as specified. 6 Sets
- 12.10 Supply, Delivery, Installation, Testing and Commissioning of 33kV Disconnecting Switch with Earthing Switch with all accessories, as specified. 3 Sets
- 12.11 Supply, Delivery, Installation, Testing and Commissioning of 33kV Current Transformer with all accessories, as specified. 12 Nos
- 12.12 Supply, Delivery, Installation, Testing and Commissioning of 33kV Lightning Arrestors with all accessories, as specified. 9 Nos
- 12.13 Supply, Delivery, Installation, Testing and Commissioning of 33kV, 630sq.mm XLPE Copper Power Cable including terminal joints for both ends with all accessories and Steel Structure, as specified. 1200 m
- 12.14 600V control cable and power cable required to complete the scope of work as specified. 1 Lot
- 12.15 Supply, Delivery, Installation, Testing and Commissioning of miscellaneous materials, grounding materials etc.
- 12.16 Adaptation work of 132kV Bus Bar Protection. 1 Lot
- 12.17 Aluminium Bus of Suitable dimension for 132kV Main Bus with clamps and Connectors for Bus and Line Bay with all other accessories and hardwares. 1 Lot
- 12.18 Tubular Bus of Suitable size for 33kV Bus including Connectors and all other accessories and hardwares. 1 Lot
- 12.19 All accessories and auxiliary equipment required for the successful operation.
- 12.20 Spare Parts as per the Bill of Quantity



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## Operational Requirement

- 12.21 Dimensions and colors of the new equipment should be as per the existing equipments.
- 12.22 All control signals and indications facilities of the existing equipments shall be properly provided in the panels.
- 12.23 The new system shall be suitably and properly integrated with the existing system for proper functioning.

## Civil Works / Steel Structure

- 12.24 The scope of works includes all the civil work such as supply of new structures, construction of new foundations or modification of foundation for all equipments as specified.
- 12.25 Clearing and striping, Site grading, Leveling, Crushed Rock Surfacing for Switchyard, Exploration Works like Laboratory Test, Soil Test, Resistivity Test and construction of new Cable Trench, Duct Bank, Conduit, Hand Hole, Cable Tray etc.
- 12.26 Steel Structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories.
- 12.27 Dismantling and Removal works of existing 1 nos. of 132/33kV 30MVA Power Transformer and other equipments as required to complete the scope of works.

## Package 13 (New Transformer Bays at Kamane Substation)

- 13.1 Shifting, Installation, Testing and Commissioning of 132/11kV, 22.5MVA Power Transformer with RTCC Panel and all accessories as specified from Bhaktapur Substation to Kamane Substation 2 Sets
- 13.2 Supply, Delivery, Installation, Testing and Commissioning of 132kV SF6 Circuit Breaker with all accessories and Steel Structure, as specified. 2 Sets
- 13.3 Supply, Delivery, Installation, Testing and Commissioning of 132kV Disconnecting Switch without Earthing Switch with all accessories, as specified. 2 Sets
- 13.4 Supply, Delivery, Installation, Testing and Commissioning of 132kV Current Transformer with all accessories, as specified. 6 Nos
- 13.5 Supply, Delivery, Installation, Testing and Commissioning of 132/11kV Transformer Control & Relay Panel with all accessories, as specified. 2 Sets
- 13.6 Supply, Delivery, Installation, Testing and Commissioning of 132kV Lightning Arrestor with all accessories, as specified. 6 Nos
- 13.7 Supply, Delivery, Installation, Testing and Commissioning of 11kV, 630sq.mm single core XLPE Copper Power Cable including terminal joints for both ends with all accessories and Steel Structure, as specified. 1200 m



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- 13.8 Supply, Delivery, Installation, Testing and Commissioning of 11kV, 300 sq.mm three core XLPE Copper Power Cable including terminal joints for both ends with all accessories and Steel Structure, as specified. 2000 m
- 13.9 Supply, Delivery, Installation, Testing and Commissioning of 11kV Vacuum Circuit Breaker Switchgear Panel with all accessories, as specified.
- |                   |        |
|-------------------|--------|
| Incomer Panel     | 1 Set  |
| Outgoing Panel    | 6 Sets |
| Bus Coupler Panel | 1 Set  |
| Trunking Chamber  | 1 Set  |
- 13.10 600V control cable and power cable required to complete the scope of work as specified. 1 Lot
- 13.11 Supply, Delivery, Installation, Testing and Commissioning of miscellaneous materials, grounding materials etc.
- 13.12 Adaptation work of 132kV Bus Bar Protection. 1 Lot
- 13.13 Aluminium Bus of Suitable dimension for 132kV Main Bus with clamps and Connectors for Bus and Line Bay with all other accessories and hardwares. 1 Lot
- 13.14 All accessories and auxiliary equipment required for the successful operation.
- 13.15 Spare Parts as per the Bill of Quantity

#### Operational Requirement

- 13.16 Dimensions and colors of the new equipment should be as per the existing equipments.
- 13.17 All control signals and indications facilities of the existing equipments shall be properly provided in the panels.
- 13.18 The new system shall be suitably and properly integrated with the existing system for proper functioning.

#### Civil Works / Steel Structure

- 13.19 The scope of works includes all the civil work such as supply of new structures, construction of new foundations or modification of foundation for all equipments as specified.
- 13.20 Clearing and striping, Site grading, Leveling, Crushed Rock Surfacing for Switchyard, Exploration Works like Laboratory Test, Soil Test, Resistivity Test and construction of new Cable Trench, Duct Bank, Conduit, Hand Hole, Cable Tray etc.
- 13.21 Steel Structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories.



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### 13.22 Dismantling and Removal works of existing Gantry Structure and other equipments as required to complete the scope of works.

#### Testing & Commissioning

Testing and Commissioning of **Power Transformer** as per the Specification should be performed to the satisfaction of the Owner.

All the work mentioned above is to be done in such a way that the shutdown period should be minimum. So, the Bidder is required to submit the proposal regarding the work methodology.

#### Note:

**The bidder shall make necessary site visits to familiarize with the condition of the road and existing bridges and culverts. The existing bridges may require temporary supports or strengthening works to transport the Power Transformers. The bidder is fully responsible for that strengthening works and the cost of such reinforcement work shall be included in the transportation part of the transformer.**

#### GENERAL REQUIREMENTS:

##### 1.1 Wiring

Wiring shall be done in accordance with the following general requirement:

1.1.1 All wiring shall be done in general purpose 600V PVC Copper wire complying with IEC. The Wire size shall not be less than 2.5Sq.mm for control circuit and 4Sq.mm for Power circuit. All wire cores shall be multi-stranded and flexible.

1.1.2 Wires should be neatly bunched and adequately supported so as to prevent sagging and strain on termination.

1.1.3 Joints and splices in wiring will not be acceptable.

1.1.4 All termination shall be made with compression type connectors. Wires shall not be spliced or tapped between terminal points.

1.1.5 Not more than two wires should be connected to any terminal points. If required, numbers of terminals shall be jumped together to provide additional wiring points.

1.1.6 Wiring leads and cable cores shall be permanently marked at both ends with an approved type of marking device having black letters and numbers impressed on white background.

##### 1.2 Cable Termination

Marshaling box shall be designed to facilitate cable entry from bottom. Removable plates shall be furnished with compression type cable glands to make entry dust proof and no weight is transferred to the terminal. The glands shall be suitable for terminating Cable Armor.

Sufficient space shall be provided to avoid sharp bending and for easy connection. A minimum space of 200 mm from the gland plate to the nearest terminal block should be provided.



### 1.3 Terminal Blocks

1.3.1 Multi-way Terminal Blocks complete with screws, nuts, washers and marking strips for terminal identification shall be furnished for terminating the internal wiring and outgoing cables.

1.3.2 Control Terminals shall be Washer head screw type, each suitable for connection of at least two numbers of copper conductor cables of requisite cross section at each end through compression type (solder less) lugs. Screw type terminal with screw directly impinging on conductor or any other type of terminal, which does not accept compression type lugs, are not acceptable. The successful Bidder shall have to take prior approval of the terminals to be used in the Block from the Owner.

1.3.3 Each Terminal shall be marked with designations obtained from schematic diagrams. At least 20 % spare Terminals shall be provided in the Terminal Blocks.

1.3.4 **Terminal blocks to be used with the Current Transformer secondary wiring**, both at the panels and cubicles, shall be provided with the shorting links with facility to open circuit or short circuit the CT secondary.

### 1.4 Painting Works

1.4.1 All sheet steel works shall be phosphated in accordance with the following procedure and in according with IEC.

1.4.2 Oil, Grease, Dirt shall be thoroughly cleaned by emulsion cleaner.

1.4.3 Pickling with dilute acid followed by washing with running water, rinse with slightly alkaline hot water and drying shall remove rust and Scales.

1.4.4 After Phosphating, thorough rinsing shall be carried out with clean water, followed by final rinsing with dilute dichromate solution and even drying.

1.4.5 The Phosphate coating shall be sealed by the application of Two Coats of staving type Zinc Chromate primer. The first coat may be "flash dried" while the second coat shall be staved.

1.4.6 After application of the Primer, Two coats of finishing synthetic Enamel Paint shall be applied, each coat followed by staving. Touch up shall be applied after completion of Tests. The color for the finishing paint shall be light Grey or as approved by the Owner.

1.4.7 The Final finished thickness of paint film on steel shall not be less than 100 microns.

1.4.8 Finished painted surface shall present aesthetically pleasing appearance from runs and drips.

1.4.9 A small quantity of finishing paint shall be supplied for minor touching up required at site after the installation.

### 2.0 CODES & STANDARDS

2.1 All Equipments supplied under this Contract Shall confirm to or be of Higher quality than the latest applicable standard as per relevant IEC.



2.2 If the Specification contained in this Contract conflict in any way with the reference Standards, the Specification shall take precedence. If there are conflicts between different specified standards covering the same materials or equipment, the standard, which will provide the highest quality and most suitable application, as determined by the Employer shall prevail.

2.3 The Contractor may propose alternative standard or equipment, which shall be equal to those specified. If the Contractor for any reason proposes alternatives to or deviations from the above standards, the Contractor shall state the exact nature of the change, the reason for making the change and shall submit with relevant Specifications of the Equipment in the original Language, and in case that these are written in languages other than English, the English version shall be attached and shall govern.

### 3.0 CONDITIONS OF SERVICE

3.1 All Plants and Equipments supplied under this Contract shall be suitable for the following Site and System Conditions.

#### 3.1.1 System Electrical parameters

##### For 132kV Equipments:

Rated Service Voltage : 132kV  
Highest System Voltage : 145kV  
Impulse Voltage Withstand Level : 650kV  
Power Frequency Withstand Voltage : 275kV  
Number of Phases : 3  
Frequency : 50Hz

##### For 66kV Equipments:

Rated Service Voltage : 66kV  
Highest System Voltage : 72.5kV  
Impulse Voltage Withstand Level : 325kV  
Power Frequency Withstand Voltage : 140kV  
Number of Phases : 3  
Frequency : 50Hz

##### For 33kV Equipments:

Rated Service Voltage : 33kV  
Highest System Voltage : 36kV  
Impulse Voltage Withstand Level : 170kV  
Power Frequency Withstand Voltage : 70kV  
Number of Phases : 3  
Frequency : 50Hz

#### 3.1.2 Climatic Conditions





3.1.2.1 All Plants and Equipment supplied under the Contract shall be entirely suitable for the Climatic Conditions prevailing at Site.

The Seismic Factor is 0.15g.

Atmospheric pollution is Moderate.

|  |                  |
|--|------------------|
| Maximum ambient Shade Temperature        | : 45 °C          |
| Minimum Ambient Shade Temperature        | : 0 °C           |
| Annual Average Temperature               | : 32 °C          |
| Maximum Wind Velocity for design purpose | : 34.4m/sec      |
| Rainfall                                 | : 1500mm/annum   |
| Relative Humidity                        |                  |
| Maximum                                  | : 100 %          |
| Minimum                                  | : 20 %           |
| Altitude                                 | : 1500m from MSL |
| Atmospheric Pollution                    | : Moderate       |

The Information provided in this Clause is given solely for the General Assistance of the Bidder and neither responsibility for it will be accepted nor will any claim based on this clause be considered.

The Bidder is advised to survey the sites covered under this Contract to acquaint with the Site Conditions.

4.1 The Contractor shall be responsible for surveying, boring, geological and subsoil conditional for all foundation, and for the precise location of the substation in the Project.

4.2 All Necessary soil tests, wherever necessary, to determine the Earth Resistivity. The Design of the Ground Grid and all foundations shall be performed by the contractor at the Substation Site.

4.3 The Contractor shall locate and record on the construction drawings, all interfacing utility lines or other obstruction. Damage to existing equipment and the Contractor at his own expense shall repair structures.

## 5.0 DRAWINGS, INSTRUCTION AND MAINTENANCE MANUALS (As Applicable)

The Contractor shall submit Detailed Drawings, Instruction and Maintenance manuals and parts list with recommended stock quantities for the equipment furnished, prepare and submit detailed engineering, Design and Construction drawings pertaining to all mechanical and Electrical Equipment and Installations in the substation. The Drawings / Manual submitted by the Contractor should also be in the form of digitized form (Compact Disk). The Drawings to be furnished by the Contractor shall include, but not be limited to the following:

5.1 Single Line and Three Lines Diagram.

5.2 Schematic electrical diagram of substations including interconnection with existing system

5.3 Layout of equipment in control room.



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- 5.4 Plan and elevation of switchyards
- 5.5 Structural Erection and Fabrication Details, wherever necessary.
- 5.6 Substation Grounding Calculations, Plans, Elevation and Details, wherever necessary.
- 5.7 Detailed Cable Schedule list and cable summary, specifying cable identification number, routing and length of the cable for the Substation.
- 5.8 Details of relay and control panel. Switchgear and Panel front and rear elevation drawings showing dimension and identification of each device and complete name plate schedule.
- 5.9 Control & Protection Schemes. Calculation and co-ordination for selecting Operation of Protective Relays.
- 5.10 Instruction Book, spare Parts' lists, Materials lists and any other documents pertaining to the Substation and required for Construction, Operation, Maintenance and Repair.

The successful Bidder will be required, at the time of signing of the Contract; to supply additional copies of the above drawings as may be selected by the Employer. These drawings, together with such drawings originally issued with the Tender documents will then form part of the Contract Document and be signed both by the Employer and the Contractor for identification purposes.

- a. Prior to commencement of the work, the Contractor shall submit detailed design drawings and data to the Employer for approval. Should the Employer direct that modifications be made in order to satisfy the requirements of the Specifications, the Contractor shall submit revised drawings for approval. Alteration in the Contract price shall not be allowed by reason of the drawings modifications.
- b. The Contractor shall prepare and furnish to the Employer such drawings, calculations, and data on materials and equipment (hereinafter in this provision called data) as are required for the proper control and completion of the work, including but not limited to those drawings, data and calculations specifically required elsewhere in the Technical Specifications.
- c. The Metric System shall be used and notations shall be in English. Drawings, calculations, and data shall be furnished as specified. All drawings and data will be subjected to review by the Employer for conformity with the Technical Specification and Contract Drawings and upon meeting review requirements shall become the property of the Employer.
- d. The Contractor shall submit detailed drawings, instruction and maintenance books, and parts lists with recommended stock quantities for the equipment furnished, prepare and submit detailed engineering design and construction drawings pertaining to all mechanical and electrical equipment and installations in the substation. The drawings to be furnished by the Contractor shall include, but not be limited to the following:

- a) Electrical System Design
  - Design Basis Report
  - Cable Schedules
  - Cable Interconnecting Diagrams
  - Relay and Metering Single Line Diagram.



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- Direct Stroke Lightning Protection (DSLP) Calculation.
  - Sizing calculation of Battery & Battery-Charger.
  - Design Calculation for indoor and outdoor Illumination System
  - Cable Sizing Calculation
  - Calculation and coordination for selecting operation of protection relays
  - Control System Architecture
  - Detailed material list
- b) Plot Plan of Substation Premises
- c) Substation Layout
- Electrical layout (Plan and section) of substations
  - Electrical Clearance diagram.
  - Erection key diagram for substations
  - Electrical Layout of Control Building
  - Cabling Layout including cable trench, cable tray, wire gutters, conduits, and specifying location.
  - Substation grounding Layout, plans, elevations and details
  - Control Room grounding Layout, plans, elevations and details
  - Cable trench, duct and conduit layout plan, elevation and details.
  - Substation lighting and convenience outlet plan, elevation, and details
  - Installation details for equipment
  - Cable schedule, specifying cable identification number, routing and length of the cable for the substation and cable summary.
  - Detailed interconnection diagram for all substation equipment, AC and DC station service equipment and all building equipment.
- d) Equipment drawings
- Dimensioned General arrangement drawings showing front and rear elevations and identification of each device and complete nameplate schedule
  - Foundation Loading Details
  - AC and DC diagram for control, metering, relaying, communication, alarm, etc. required to describe in detail the operation of all systems in the substation. Wire numbers and terminal numbers for each device shall be clearly marked on all AC and DC elementary and schematic diagram
  - Communication system drawings
  - Technical Catalogues
  - Instruction Manuals for Erection, Testing and Commissioning
  - Operation and Maintenance Manuals.
  - Instruction books, spare parts lists, material lists and any other documents pertaining to the substation and required for construction, operation, maintenance and repair
- e) Civil, Structural and Architectural Works
- Excavation and Backfilling.
  - Details of veiling and grading of substation area.
  - Construction Design/calculation of all Civil structural works
  - Drainage System detailed construction layouts and design



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- Foundation Layout of Substations, plans and elevations indicating top of Foundations, details for anchor bolt installation, plus all data required for civil works
  - Construction Design and Civil, Structural and architectural drawings for the Control building.
  - Details of cable trenches, and cable ducts
  - Details of stone spreading within substation area.
- f) General Documentations
- Commissioning Manual
  - Testing Programs
  - QA/QC Documentation including MQP and FQP for all Equipment & systems
  - Testing and commissioning procedure of each equipment
  - Design (Type) Test Reports as specified in par. **Error! Reference source not found.**
  - Routine Test Reports of all Equipment
  - Field Test Reports

### Drawings and Documents Submission Schedule

The Contractor shall submit the drawings and data to the Employer for approval in the following manner and designated deadlines.

The Contractor's Works Identification System shall be submitted for the Employer's approval prior to implementation. The Employer may select one joint Identification System for the entire Works and reserves the right to deviate from the Contractor's proposal.

**Table 0.1: For Supply of Equipment and/or Installation Works**

| Item   | No. of copies | Deadline & Remarks                                     |
|--|---------------|--|
| Proposed work program                              | 2             | Within 30 days from the Effective date of the Contract |
| Principal equipment drawings for approval          | 2             | Within 90 days from the Effective date of the Contract |
| Principal installation drawings for approval       | 2             | Within 30 days from the Effective date of the Contract |
| Revised drawings for approval                      | 2             | Within 14 days after receiving drawing for revision.   |
| Final drawings with reproducible copies            | 3             | Within 14 days after receiving approval                |
| AutoCAD files of Final Drawings in USB flash drive | 2             | Within 14 days after receiving approval                |
| Schedule of manufacturing and transportation       | 2             | Within 45 days from the Effective date of the Contract |
| Plan for shop tests                                | 2             | Not less than 30 days before testing                   |



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|  |               |  |
|--|---------------|--|
| Results of shop tests for approval   | 2             | Upon completion of tests                             |
| Records of shop tests  | 2             | Upon approval of results of shop tests               |
| Plan for field-tests   | 2             | Not less than 14 days before testing                 |
| Report for field tests   | 2             | Within 14 days after completion of each test         |
| As-built drawings  | As Instructed | Within 30 days after completion of installation work |
| AutoCAD file of as-built drawings in USB flash drive                       | 2             | Within 30 days after completion of installation work |
| Instruction manuals and drawings with reproducible copies for installation | 2             | 30 days after shipment of Equipment                  |

**Table 0.2: For Civil Works**

| Item   | No. of copies | Deadline & Remarks                                     |
|--|---------------|--|
| Detail construction schedule & method                      | 2             | Within 30 days from the Effective date of the Contract |
| Drawing for approval (principal drawings for construction) | 2             | Within 45 days from the Effective date of the Contract |
| Revised drawings for approval                              | 2             | Within 14 days after receiving drawings for revision   |
| As-built drawings  | 2             | Within 30 days after completion of construction works  |
| AutoCAD files of as-built drawings in USB flash drive      | 2             | Within 30 days after completion of construction works  |

**Table 0.3: Others**

| Item                                      | No. of copies | Deadline & Remarks                                     |
|---|---------------|--|
| Drawing and Deliverable Schedule          | 1             | Within 30 days from the Effective date of the Contract |
| QA/QC Documentation                       | 1             | Within 30 days from the Effective date of the Contract |
| Monthly Progress Reports with photographs | 1             | By 7th of following month                              |
| Packing list (copy)                       | 1             | At each shipment                                       |
| Invoice (copy)                            | 1             | At each shipment                                       |



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|                              |   |                  |
|------------------------------|---|------------------|
| Bill of lading (copy)        | 1 | At each shipment |
| Certificate of origin (copy) | 1 | At each shipment |

### Drawings: Titles, scales and Sizes

The title of the drawing, Contract Number, the signature of the Contractor's engineer and the date shall appear in the bottom right-hand corner of each drawing in the following format:

**Nepal Electricity Authority**  
(Government of Nepal Undertaking)  
**Transmission Directorate**  
**Grid Development Department**

Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations.

**Contract No:** GOD/2078/079-14

In general the scales of the drawings shall be 1:200. The Contractor, however, can prepare and submit drawing in any other appropriate scales with the prior approval of the Employer. The Contractor shall use any one of the following sizes for the preparation of drawings as appropriate:

|    |               |                    |
|----|---------------|--------------------|
| A0 | 841 x 1189 mm | (33.11 x 46.81 in) |
| A1 | 594 x 841 mm  | (33.39 x 33.11 in) |
| A2 | 420 x 594 mm  | (16.54 x 23.39 in) |
| A3 | 297 x 420 mm  | (11.69 x 16.54 in) |
| A4 | 210 x 297 mm  | (8.27 x 11.69 in)  |

### Employer's Approval

The Employer will send comment/approval each drawing/design/document within twenty-one (21) days after receipt at his office. One print of each of the drawings submitted for approval will be returned by the Employer or Employer's Representative, marked either "APPROVED", "APPROVED EXCEPT AS NOTED", or "RETURNED FOR CORRECTION".

- a) The notations "APPROVED" or "APPROVED EXCEPT AS NOTED" will authorize the Contractor to proceed with the manufacturing drawings, subject to the corrections, if any indicated thereon. The notation "RETURNED FOR CORRECTION" shall require the Contractor to make the necessary revisions on the drawings and submit for approval within fourteen (14) days in the same manner as before.

Approval of the Contractor's drawings shall not in any way relieve the Contractor of any part of his obligation to meet all the requirements of the Contract or of the responsibility for the correction of the drawings.



- b) Reproducible: Reproducible of all final approved drawings shall be made on USB flash drive.

Neither the review nor lack of review of any drawing, calculation or data shall waive any of the Specifications or Contract drawings, or responsibility for correctness of the drawings, calculations or data. Defective work, materials, and equipment may be rejected notwithstanding conformance with drawings, calculation and data reviewed by the Employer/the Employer's representative. The Employer shall have the right to require the Contractor to make any changes in the design which may be necessary, to make the apparatus/works conform to the requirements and intent of the Specifications, with no additional cost to the Employer.

Approval of the Contractor's drawings (including cases of un-noticed/un-known deviations) shall not in any way relieve the Contractor of any part of his obligation to meet all the requirements of the Contract or of the responsibility for the correction of the drawings. The ultimate responsibility of meeting all the requirements of the technical specifications and fulfill contractual obligations shall rest on the Contractor.

Any drawings changed by the Contractor during the development of his design after review by the Employer shall be submitted for approval.

Within 30 days from the effective date of the Contract, the Contractor shall prepare and furnish to the Employer a schedule for submission of all drawings and data. Each drawing to be submitted for the work of the Contract shall be listed in the Schedule, and the Schedule shall contain separate columns for scheduled submittal dates and actual submitted dates. The schedule will be reviewed by the Employer/ the Employer's representative and the Contractor shall correct any defects noted therein. The schedule shall at all times present a complete plan for orderly submission of such drawings and data and shall be updated and resubmitted monthly showing actual submittal dates and revised scheduling. The Contractor shall promptly notify the Employer of any occurrence requiring substantial revision of the schedule giving a detailed explanation of the cause of the revision. Revised schedules will be revised and corrected in the same manner as the original schedule.

**6.0 The Contractor shall provide Spare parts and Tools for the substation as specified in this Specification.**

Furnish qualified supervision and construction personnel for the Installation, Testing, Commissioning and Final system testing and checking out of the equipment listed above and details in the Price Schedule. The testing and commissioning of the equipment should be in the supervision of the manufacturer's representative and should guarantee the test performed. The work shall be performed in close cooperation and collaboration with the Employer / Engineer.

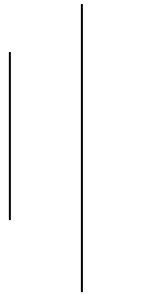
Coordination of the substation work with the Installation of others shall be the responsibility of the Contractor. The Employer / Engineer will furnish the information needed to coordinate the substation work with the other work.



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## SECTION-I, PART-2



### TECHNICAL SPECIFICATION (POWER TRANSFORMER)



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## SECTION-I, PART-2

### POWER TRANSFORMER

#### 1 GENERAL

This specification covers the design, manufacture, assembly, shop test, supply, delivery, installation works and field test of the power transformer complete with all accessories, fittings and auxiliary equipment for efficient and trouble-free operation as specified herein under.

The equipment specified in this Section of the Contract shall conform to the latest edition of the appropriate IEC specifications and / or other recognized international standards. In particular:

|           |   |
|-----------|---|
| IEC 60076 | Power transformer   |
| IEC 60137 | Insulating bushings for alternating voltages above 1kV  |
| IEC 60156 | Insulating liquids - Determination of the breakdown voltage at power frequency – Test method    |
| IEC 60296 | Specification for unused mineral insulating oils for transformers and switchgear                |
| IEC 60551 | Determination of transformer and reactor sound levels   |
| IEC 60616 | Terminal and tapping markings for power transformer   |
| IEC 60722 | Guide to the lightning impulse and switching impulse testing of power transformers and reactors |

#### Equipment to be Furnished:

132/33kV, 100MVA Power Transformer - 4 Sets

132/33kV, 63MVA Power Transformer - 2 Sets

132/11kV, 45MVA Power Transformer - 2 Sets.

33/11kV, 24MVA Power Transformer - 6 Sets

#### 2. DESIGN REQUIREMENT

- 2.1. The transformer shall be connected to three phase 50Hz system of 132kV and 33kV systems as specified for 132/33kV, 100MVA & 63MVA Power Transformers; 132kV and 11kV systems as specified for 132/11kV, 45MVA Power Transformers and 33kV and 11kV systems as specified for 33/11kV, 24MVA Power Transformers.
- 2.2. The transformer shall be installed outdoor in a hot, humid atmosphere. The transformer shall be oil immersed and designed for the cooling system as specified in Appendices.
- 2.3. The transformer shall be capable of operating continuously at its rated output without exceeding the temperature rise limits as specified in Appendices.
- 2.4. The transformer windings shall be designed to withstand short circuit stresses at its terminal with full voltage maintained behind it for a period as per IEC- 60076.
- 2.5. The transformer shall be capable of continuous operation at the rated output under the following conditions:
  - a) The Voltage varying  $\pm 10\%$  of rated voltage



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- b) Frequency varying  $\pm 5\%$  of the rated frequency
- 2.6. The transformer shall be capable of delivering its rated output at any tap position.
- 2.7. The transformer shall be free from annoying hum and vibration when in operation even at 10% higher voltage over the rated voltage. The noise level shall be in accordance with respective IEC standards.
- 2.8. The transformer shall be designed and constructed so as not to cause any undesirable interference in radio or communication circuits.
- 2.9. The transformer shall be designed to take care of third harmonics not to exceed 2% of fundamental frequency. However, tertiary winding shall be provided on transformers with capacity 50MVA and above.

### 3. CONSTRUCTION FEATURES

#### 3.1 Tank

The tank shall be of all welded construction and fabricated from sheet steel of adequate thickness. All seams shall be properly welded to withstand requisite impact during short circuit without distortion. All welding shall be stress relieved.

Stiffener of structural steel for general rigidity shall reinforce the tank wall. The tank shall have sufficient strength to withstand without any deformation by mechanical shock during transportation and vacuum filling in the field.

The tank cover shall be bolted on to the tank with weatherproof, hot oil resistant, resilient gasket in between for complete oil tightness. If gasket is compressible, metallic stops shall be provided to prevent over compression. Bushings, turrets, cover of access holes and other devices shall be designed to prevent any leakage of water into or oil from the tank. The tank cover shall also be provided with two (2) nos. of grounding pads and connected separately to tank grounding pads.

The transformer tank shall be provided with four sets of bi-directional flanged wheels for rolling the transformer parallel to either direction of center line on rail. Mounting rails and anti-earthquake device shall also be provided.

All heavy removable parts shall be provided with mounting rails along with eye bolt for ease of handling and necessary lugs and shackles shall be provide to enable the whole transformer to be lifted by a crane or other means. Manholes of sufficient size shall be provided for access to leads, windings, bottom terminals of bushings and taps.

#### 3.2 Core & Coils

The transformer shall be of core type. The core shall be built up with interleaved grade non-aging, low loss, high permeability, grain-oriented, cold rolled silicon steel lamination properly treated for core material. The coils shall be manufactured from electrolytic copper of suitable grade. They should be properly insulated and stacked.



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All insulating material shall be of proven design. Coils shall be so insulated, that impulse and power frequency voltage-stresses are minimum.

Coil assembly shall be suitably supported between adjacent sections by insulating spacers and barriers. Bracing and other insulation used in the assembly of the winding shall be arranged to ensure a free circulation of the oil and to reduce the hot spot of the winding.

All leads from the windings to the terminal board and bushings shall be rigidly supported to prevent injury from vibration or short circuit stresses. Guide tube shall be used where practicable.

The core and coil assembly shall be securely fixed in position so that no shifting or deformation occurs during movement of transformer or under short circuit stresses.

The bidder shall offer the CORE for inspection and approval by the purchaser during the manufacturing stage. Bidder's call notice for this purpose shall be accompanied with the following documents, as applicable, as a proof towards use of **PRIME CORE MATERIALS**.

- i. Invoice of the supplier
- ii. Mill's Test Certificates
- iii. Packing List
- iv. Bill of Lading
- v. Bill of Entry certificate by the Customs

Core Materials shall be directly purchased either from the manufacturer or through their accredited marketing organization of repute and not through any agent. However, if the proof provided is considered sufficient by the Owner the core inspection can be waived.

### 3.3 Tapping

- 3.3.1 On-load taps as specified in Appendix shall be provided on the high voltage winding of the transformer.
- 3.3.2 The transformer shall be capable of operation at rated output at any tap position provided the primary voltage does not vary by more than  $\pm 10\%$  of the rated voltage corresponding to the normal tap. Where the new transformer is required to operate in parallel with the existing one, the tap changer shall be similar to the one installed with the existing transformer.
- 3.3.3 The winding including the tapping arrangement shall be designed to maintain the electromagnetic balance between H.V., L.V. & Tertiary winding at all voltage ratios.

### 3.4 On-Load Tap Changer



- 3.4.1 The on-load tap changer shall be of high speed resistor type principle. The on-load tap changer shall be vacuum technology without time-based maintenance criteria and made by MR Germany or ABB Sweden.
- 3.4.2 The transformers shall be supplied complete with an automatic control on load tap changer, three phase, and high speed resistor type. All tap ratings shall be full capacity. Built-in tank current transformer (s) for voltage regulating device shall be supplied if required.
- 3.4.3 The rated through current of the tap-changer, as defined in 4.17 of IEC 60214, shall not be less than 350 A. It shall be able to operate at the emergency and overload ratings of the transformer without damage.

In addition to the requirements of 8.3 of IEC 60214 for on-load tap-changers, tap-changing equipment shall be capable of carrying the same currents, due to external short-circuit, as the transformer windings with which they are associated.

- 3.4.4 The contact life of the moving and fixed contacts of the on-load tap changer switch at the rated through current (see clause 15.3) shall be 600,000 operations minimum. The mechanical life shall be more than 800,000 operations. The number of operations between each maintenance period shall be 300,000 operations. The type test reports to support these figures shall be attached to the bid.
- 3.4.5 The on-load selector switch can be drained separately within a separate oil tight enclosure whose insulating oil can be drained separately from the insulating oil of the transformer through an internal suction pipe led to the ground of the on-load tap changer compartment. Removable bolted covers shall be provided for access to the arcing switch and selector contacts without having to open the main tank or lowering the oil in the main tank. The tap changer head shall be provided with an integrated pressure relief valve proposed by OLTC manufacturer.
- 3.4.6 The protective relay and valve mounted into the oil pipe between the tap changer and oil conservator responding to the oilflow from the on-load tap selector switch oil compartment toward the oil conservator shall be provided. Other designs of protective relays may be accepted subject to NEA's approval. The protective relay for tap changer shall be equipped with one contact for tripping the circuit. The OLTC conservator tank shall be fitted with a silica gel breather of the maintenance free type in a convenient floor height. Each silica gel breather shall be equipped with a condition based selflearning microprocessor control unit for optimal maximization controlled regeneration on the silica gel during phase when the transformer exhaling and LED status condition. The function shall be tested via a test button. A stainless steel filter at the bottom shall protect the silica gel chamber against external environment influences.
- 3.4.7 The tap changer shall be automatically driven by a motor drive assembly which shall be built onto the side of the transformer tank. All components of the motor drive shall be housed together in an IP54 protection class enclosure or which is electrically heated to prevent excessive moisture and which shall allow accommodation of specially made, supplementary equipment. The hand crank or hand wheel interlocked with the motor control shall also be furnished.
- 3.4.8 The power supply for load tap changer equipment shall be from a 400/230V, 3 phase, 4 wire grounded neutral, 50Hz or 230V single phase 50Hz source.



- 3.4.9 The tap position indicator shall be furnished at the tap changer head as well as at motor operating mechanism and identified by the numbers in sequence. The number "1" shall designate the highest tap voltage; consequently the number "17" indicated the lowest tap voltage. These identifications shall be in perfect correspondence to those indicated in the connection diagram on the nameplate.
- 3.4.10 The "raise" function shall move the tap changer to a higher number of tap position indicator and the "lower" function shall move the tap changer to the lower number of tap position indicator.
- 3.4.11 The following devices shall be provided in the motor drive enclosure:
- a) "Raise and lower" switch for manual control at the transformer.
  - b) "Local-remote" switch.
  - c) "Selsyn type" transmitter for remote tap position indication. Potentiometer types are also acceptable.
  - d) Operation counter
  - e) Circuit breaker for control and power supply circuits.
  - f) Circuit breaker for motor protection circuit.
  - g) Power "On" indicator.
  - h) Local tap position indicator with drag hands to indicate maximum travel. Tap position shall be readable from outside without any obstruction.
  - i) Limiting device to prevent travel beyond extreme tap positions.
  - j) Contacts to operate remote light to indicate when tap changer is in operation.
  - k) Convenient outlet for single phase, 230Vac and interior lamp.
  - l) Terminal block having at least 10% spare terminals.
  - m) Hand wheel for manual operation, interlocked with motor control.
  - n) Interlock in control circuit to prevent operation in wrong direction of rotation.
  - o) Additional contact assembly for sensing the position of the tap changer and suitable for use in conjunction with SCADA (Supervisory Control and Data Acquisition) equipment.
  - p) Voltage monitoring circuit which shall sound an alarm signal in case voltage lower or higher than limit caused by the failure of automatic voltage regulating relay.
  - q) Control circuit for preventing continuous operation of tap changer which shall block the operation of motor drive after an adjustable setting time.



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3.4.12 The requirements to be met by the motor drive are summarized below:

- Mechanical indication of step position at the motor drive cabinet
- Transmission of step positions of the transformers to the load dispatch center and to the local control room
- Manual operation in the case of a failure in the electrical supply system
- Push button remote operation via the local control room and/or via the load dispatch center and remote tap position indication
- Step-by-step operation with automatic stop after each step
- No interference of the running tap changing procedure by permanent control switch /push button action
- Operation from local or remote control switch shall cause one tap movement only unless the control switch is returned to the “off” position between successful operations
- Automatic passage control for central taps
- Automatic restart of tap changing operation after a failure in the electrical supply system, interlocking to be provided against simultaneous raise/ lower operation
- Blocking of end positions by means of limit switches.
- Protection to prevent over-running of any tap position
- Provisions to be made for parallel running and automatic operation controlled by a voltage regulating device and parallel control unit. Motor operation via push buttons or lower/raise switch.
- Hand operation by means of a crank handle. It must not be possible to operate the electrical drive when the manual operating gear is in use.

All apparatus and instruments required for remote control as well as the connections and control cables running from the transformers towards the external and internal circuits of the substation are to be provided as specified in the Scope of Work / Scope of Supply.

3.4.13 The OLTC Mechanism and Control cubicle including Voltage Regulator, Parallel Control Unit both remote and local shall be MR Germany or ABB Sweden.

### 3.5 Insulating Oil

The insulating oil shall conform to the latest revision of IEC Publication 60296, properly inhibited for preventing of sludging.



The necessary first filling of oil shall be supplied for the transformer in non- returnable container suitable for outdoor storing. Five percent (5%) excess oil shall also be provided to take wastage into account.

### 3.6 Oil Preservation System

Oil preservation shall be by means of conservator tank system.

#### 3.6.1 Conservator tank system

- 1) The conservator tank shall be mounted on a bracket fixed on the tank.
- 2) The conservator tank may be provided with two compartments, one for the main transformer tank while the other is for the OLTC compartment. The partition barrier shall be provided so that OLTC oil shall not be mixed up with transformer oil under any circumstances.
- 3) One compartment shall be connected with the main transformer tank by pipes through double float Buchholz Relay (gas operated relay) with valves at both ends.
- 4) The other compartment shall be connected with OLTC compartment by pipes through single float Buchholz Relay / oil surge relay with valves at both ends.
- 5) Using a flexible urethane air cell shall prohibit contact of the oil in the compartment for the main tank with atmosphere. The cell shall be vented into the atmosphere through a silica gel breather and shall inflate or deflate as oil volume changes.
- 6) Both compartments shall be provided with their own breather, filler cap and drain plug.
- 7) Each compartment of the conservator shall be provided with dial type level indicator visible from the ground level and fitted with low oil-level alarm contact. Plain oil level gauge shall also be provided to each compartment.

### 3.7 Temperature Indicators

- 3.7.1 One set of winding temperature indicator shall be supplied and fitted locally so as to be readable at a standing height from ground level. Necessary current transformer and heating coil for obtaining thermal images of winding temperatures and a detector element shall be furnished and wired.
- 3.7.2 The above winding temperature indicator shall be provided with necessary contacts to take care of the following.
  - a. Starting of cooling units in stages, with rise of temperature
  - b. Alarm on high temperature
  - c. Trip on higher temperature

One set of oil temperature indicator with maximum reading pointer and electrically separate sets of contacts for alarm and trip shall be mounted locally so as to be readable at a standing height from ground level.



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### 3.7.3 Make & Manufacturer:

The Temperature Indicators should be from the manufacturer: **AB KHILSTROM Sweden or equivalent.**

### 3.8 Buchholz Relay (Gas Operated Relay - For Conservator Type of Oil Preservation)

3.8.1 The Buchholz Relay shall be provided with two floats and two pairs of electrically separate contacts - one pair for alarm and the other pair for tripping.

3.8.2 Buchholz Relay shall be provided with the facility for testing by injection of air by hand pump and with cock for draining and venting of air

3.8.3 Pressure relief device with a sudden gas pressure relay shall be furnished and mounted on top of the tank in the region of the gas space. The relay shall respond to sudden increase in internal gas pressure in the transformer due to internal arcing. The relay shall be provided with trip contact.

Above relay shall be stable during change in oil or gas pressure due to change in ambient temperature and / or loading.

### 3.9 Transformer Bushings

All bushings shall conform to the requirements of the latest revisions of IEC Publication 60137.

The bushing shall be located so as to provide minimum electrical clearances between phases and also between phase and ground as per relevant standards.

All bushings shall be porcelain type and shall be furnished complete with terminal connectors of adequate capacity including arcing horns for HV & LV. The porcelain used in bushings shall be homogeneous, nonporous, uniformly glazed to brown color and free from blisters, burns and other defects.

Stresses due to expansion and contraction in any part of the bushing shall not lead to deterioration.

Liquid / oil-filled bushings for 36kV and above shall be equipped with liquid level indicators and means for sampling and draining the liquid. The angle of inclination to vertical shall not exceed 30 degree. Oil in oil-filled bushings shall meet the requirement of the transformer oil standards specified.

Bushings rated for 72.5kV and above shall be of the oil-filled condenser type with a central tube and draw-in conductor which shall be connected to the connector housed in the helmet of the bushings. The pull through lead shall be fitted with a gas bubble deflector. Condenser type bushings shall be equipped with following in addition to requirements indicated elsewhere.

- a. Provision for power factor testing without disconnecting main leads



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- b. Stress rings and lower end shields
- c. Current transformers shall be provided as specified, and the bushing shall be so arranged that it can be removed without disturbing the current transformers and secondary terminals
- d. Bushing turrets shall be provided with vent pipes, which shall be connected to route any gas collection through the Buchholz relay.

### 3.10 Breather

Each conservator vessel shall be fitted with a maintenance free breather in which only pure silica gel has been filled as a dehydrating agent. The silica gel filling capacity shall be minimum 1kg for the OLTC conservator and 2 kg for the main conservator. The maintenance free dehydrating breathers shall have a humidity and temperature sensor and must have 3 LED for status indication and a data logger to log all important events. The maintenance free breather shall be equipped with a self learning algorithm alpha control for the OLTC conservator and beta control for main tank conservator. Moving parts such as solenoid valves or fans are not accepted. Additionally an Anti-Condensation heater shall be installed in the control box and test button is required for auto-diagnosis and testing functions.

### 3.11 Marshaling Box

A sheet steel weatherproof marshaling box of IP-55W construction shall be provided. The box shall contain all auxiliary devices except those which must be located directly on the transformer. All terminal blocks for external cable connections shall be located in this box.

The marshaling box shall have the following but not limited to them

- a) Load disconnect switch for incoming power supply for auxiliaries
- b) Cooler fan motor starters and necessary protection
- c) FAN START-STOP control switch
- d) AUTO-MANUAL selector switch
- e) Wiring and termination individually of the following alarm contacts for remote pre-trip alarm
  - Buchholz relay alarm for main tank (for conservator type)
  - Buchholz / oil surge relay alarm for OLTC
  - Winding temperature high alarm
  - Oil temperature high alarm
  - Tank oil level low alarm



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- OLTC oil level low alarm
- Tap change incomplete alarm
- OLTC out of step
- f) Wiring and termination individually of the following trip contacts for remote trip and trip alarm
  - Winding temperature high trip
  - Oil temperature high trip
  - Buchholz relay trip or sudden gas and sudden oil pressure relay trip
  - Pressure relief device

Cubicle illumination lamp with door switch and space heater with thermostat and ON-OFF switch shall be provided.

Wiring shall be as specified in section under General Technical Specifications.

### 3.12 Cable Termination

Marshaling box shall be designed to facilitate cable entry from bottom. Removable plates shall be furnished with compression type cable glands to make entry dust tight and no weight is transferred on the terminal. The glands shall be suitable for terminating cable armour.

Sufficient space shall be provided to avoid sharp bending and for easy connection. A minimum space of 200mm from the gland plate to the nearest terminal block shall be provided.

### 3.13 Terminal Blocks

Terminal blocks shall be as specified in Technical Requirements under section in General Technical Specifications.

### 3.14 Painting

Painting works shall be as specified in Technical Requirements under section in General Technical Specifications.

### 3.15 Auxiliary supply

All indications, alarms and trip contacts provided shall be suitable for operation on a nominal 110V DC system.

Tap changing gear shall be suitable for operation of 400V  $\pm$  10%, 3 phase, 4 wire, 50Hz, AC.



Cooling fans shall be rated at 400V  $\pm$  10% 3 Ph, 50Hz, AC.

The tap changing and cooler control supply voltage shall be 400/230V, 50Hz AC.

#### **4 AUXILIARY EQUIPMENT TO BE FURNISHED**

##### **4.1 Bushing Current Transformer**

Each transformer shall be provided with one (1) set of current transformer each on the HV and LV terminal bushings to be used for transformer differential relaying.

The transformer shall be provided with neutral bushing current transformer to be used for earth fault protection in High / Low Voltage sides.

Current transformer rating and accuracy class shall be as per Appendices and shall be designed to withstand the electromagnetic stresses developed during short circuit.

The current transformer secondary leads shall be wired up to a separate disconnecting type terminal block within the marshaling box. The terminal blocks shall be complete with shorting links.

##### **4.2 Lightning Arresters**

The lightning arrestor shall be mounted on tank for nominal Voltage level up to 33kV. The lightning arresters shall comply with the specifications in the chapter in Lightning Arrestor. The Contractor shall coordinate the insulation.

##### **4.3 Cooling Equipment**

Each transformer shall be equipped with a sufficient number of radiators or cooling units to operate as a self-cooled unit or with forced cooled ratings, as specified. Single stage or double stage fans shall be provided as specified in appendix. Fans shall be automatically controlled by a transformer winding temperature relay.

Fan motors shall be of totally enclosed design and control equipment shall include a circuit breaker with thermal and magnetic trip for each group of fans, contactors with overload protection, and selector switch for MANUAL-AUTOMATIC operation.

#### **5 TESTS**

##### **5.1 Routine Tests**

On completion, each transformer shall be subjected to the following Routine Tests. As far as practical, the procedure of IEC 60076 shall be followed.

- a) Applied voltage test
- b) Induced voltage test
- c) No-load loss and excitation current test



- d) Impedance voltage and load loss test
- e) Winding resistance measurement
- f) Ratio test
- g) Polarity and phase-relation test
- h) Leakage test
- i) Insulation resistance test
- j) Insulation power factor test, etc.

## 5.2 Special Tests

The following tests shall be performed on each transformer:

- a) Zero phase sequence impedance measurement
- b) After fabrication, the tank fitted with all valves, covers, conservator tank etc., shall be completely filled with transformer oil and subjected to a pressure of 25% over the normal pressure of oil. This pressure shall be maintained for 12 hours during which time there shall be no leakage of oil nor shall there be any permanent set when pressure is released. If any leakage or permanent set occurs, the test shall be conducted again after rectification of defects.
- c) Excitation loss and current measurements shall be made at 90%, 100%, and 110% of rated voltage.
- d) Measurement of third harmonic voltage.
- e) Measurement of acoustic noise level.
- f) Measurement of harmonics of the no-load current.
- g) Temperature rise test.
- i) Dissolved Gas Analysis test (Before and After Completion of Tests)
- j) Magnetic Balance Test

## 5.3 Design Test (Type Test)

Following design tests shall be performed on any one of identical transformers of each type in accordance with latest revision of IEC Publication 60076: (identical shall mean having same rating and construction)

- a) Impulse voltage withstand test



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- b) Short circuit test - only design calculations to be submitted confirming withstand capability

The Bidder shall submit copy of design (Type) test report from recognized testing laboratory for the Power Transformer of the offered type, Voltage rating and size along with the bid.

The Bidder shall also submit the type test report of the OLTC from reputed testing agency accredited by ILAC or IAF.

#### 5.4 Tests on Miscellaneous Components

The various components of the transformer such as insulating oil, bushings, current transformers, etc. shall be tested in accordance with the latest revision of relevant standards listed in this Specification. Such test report shall be submitted during inspection or prior to dispatch for NEA approval.

The ON-LOAD tap changer shall be tested in accordance with the relevant IEC standard.

#### 5.5 Test Certificates

Test certificates shall be furnished in required number of copies for approval.

If the inspection is waived, the routine, special and design test certificates of the transformer as well as miscellaneous equipment shall be furnished for approval before the dispatch of the equipment from the factory.

#### 5.6 Field Tests

After installation at Site, the transformer shall be subjected to the following field tests:

- a) Construction inspection
- b) Insulation oil test for
  - Dielectric strength
  - Acidity content
  - Dissolved Gas Analysis
- c) Measurement of insulation resistance
- d) Ratio tests
- e) Polarity tests
- f) Tap change operation test, etc.
- g) Magnetizing balance test
- h) Calibration of WTI and OTI



- i) Setting of alarm, trip and cooler controls and operation check.

## 6 TENDER EVALUATION AND THE GUARANTEED LOSSES

### 6.1 Capitalization of Transformer Losses:

When evaluating the individual bid received from various Bidders, the transformer shall be evaluated for the cost of losses based on the following relation.

$$P_E = P_b + K_L \times L_L + K_{NL} \times L_{NL} + K_{CL} \times L_{CL}$$

$P_E$  = Evaluated Price

$P_b$  = Bid Price

$K_L$  = Value of Load Loss

$L_L$  = Guaranteed Load losses at rated Current (Maximum MVA base)

$K_{NL}$  = Value of no Load Loss

$L_{NL}$  = Guaranteed no Load Loss

$K_{CL}$  = Value of Cooler Loss

$L_{CL}$  = Guaranteed Cooler Loss

The transformer losses shall be capitalized as follows:

- a) Value of No load losses: US\$ 4684.00 per kW
- b) Value of Load losses: US\$ 1180.00 per kW
- c) Loss associated with cooling fan load: US\$ 393.00 per kW

If the bidders quote unrealistic and unachievable guaranteed transformer loss values (no-load or load losses), then the Employer may ask the bidder to submit technical justifications to substantiate such guaranteed losses. If the justifications are not satisfactory, the proposed transformers shall be rejected and the bid shall be considered non-responsive.

### 6.2 Guaranteed Values Not Reached

If the individual losses of a power transformer as measured during test exceeds the values guaranteed in the Bid within the tolerances permitted by relevant standards, then for each kilowatt of losses in excess of the losses guaranteed, an amount at the rates of twice the rates of specified in clause 6.1 for no load losses, load losses and cooling (fan) losses shall be deducted from the Contract Price of the successful Bidder.

Any transformer shall be rejected if losses exceed the guaranteed value by an amount in excess of the following

Total losses: 10%

Component losses: 15% (unless the total loss exceeds 10 %)

In case of loss capitalization, no tolerance shall be permitted for the guaranteed value.

## 7 PERFORMANCE GUARANTEE



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The performance figures quoted on Technical Data Sheet shall be guaranteed within the tolerances permitted by relevant standards listed under section of General Technical Specifications, and shall become a part of the successful Bidder's Contract. In case of loss capitalization, no tolerance shall be permitted for the guaranteed value. The transformer will be rejected, if the measured no-load and load losses (excluding fan loss) exceed the guaranteed value by over 15% provided that the total losses do not exceed 10% as specified.

## 8 DRAWINGS, DATA & MANUALS

Submission of Drawings, Data & Manuals by the Bidder along with the Tender Document and that after the award of Contract for approval shall be as follows:

8.1 Typical general arrangement drawing of the proposed equipment shall be submitted along with the bid.

8.2 After Award of Contract

After award of Contract, the successful Bidder shall submit the required number of copies of following data for approval.

- 1) Outline dimensional drawing showing the general arrangement, indicating the space required for:
  - Cable termination arrangement
  - Wheel base dimension & detail
- 2) Head clearance required for de-tanking of core and coil assembly
- 3) Foundation plan and loading
- 4) Transport / shipping dimension with net weight and weights of various parts
- 5) Final calculation of impedance for each transformer at normal, lowest and highest taps.
- 6) Schematic flow diagram of cooling system showing the number of cooling units
- 7) Technical details along with control schematic and wiring diagram for marshaling box, remote tap-changer control panel.
- 8.3 Any other relevant data, drawing and information necessary for review of the items under Clause No. 8.2 whether specifically mentioned or not, shall be furnished along with this information.

## 9 NAME PLATE

Each transformer shall be provided with a nameplate of weather resistant material fitted in a visible position showing but not limited to the following items:



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- a) Kind of transformer
- b) Manufacturing standard
- c) Manufacturer's name
- d) Year of manufacture
- e) Manufacturer's serial number
- f) Number of phases and frequency
- g) Rated power
- h) Rated voltages and currents
- i) Connection symbol (Vector group)
- j) Percentage impedance at normal, highest and lowest taps at max. base MVA
- k) Type of cooling
- l) Total weight
- m) Weight of insulating oil
- n) Weight of transportation and un-tanking
- o) No-load and Full load losses values in kW
- p) Temperature rise
- q) Connection diagram
- r) Insulation levels
- s) Details regarding tappings.

## **10 SPARE PARTS**

The spare parts shall be provided in required quantities as listed in Price Schedule. Further spare parts as recommended by the manufacturer shall also be included in the Price Schedule. If the spare parts are deemed not required by employer, it can be deleted during contract negotiation.

## **11 TRANSPORTATION**

The core and coils shall be completely dried before shipment and assembled with tank and with oil or dry nitrogen depending upon the size of the transformers. In order to facilitate handling and shipping, as many external accessories as practical, including bushings, shall



be removed and replaced by special shipping covers. The Contractor shall give special attention to the limitation of bridge capacity in Nepal and make necessary transportation arrangements accordingly.

Bushings, radiators and other accessories, which may be affected by moisture, shall be packed in moisture proof containers.

Shock recorders shall be installed on the transformers to record maximum shock forces during shipment / transport. This value shall not exceed the value provided by the manufacturer as per standard.





## APPENDIX 2.1: TECHNICAL PARTICULARS OF 132/33kV, 100MVA POWER TRANSFORMERS

| S. No. | Description   | Required data for 132/33kV 80/100MVA Transformer   |
|--------|---|--|
| 1.     | Rated capacity  | 80/100MVA  |
| 2.     | Quantity required   | Four (4) Nos.  |
| 3.     | Type  | Outdoor, Oil-immersed  |
| 4.     | Type of cooling   | ONAN / ONAF (80/100MVA)  |
| 5.     | Temperature rise above 40 degree C ambient temperature                                |  |
|        | a) In oil by thermometer  | 50 degree C  |
|        | b) In winding by resistance   | 55 degree C  |
| 7.     | Number of phases  | 3 (three)  |
| 8.     | Maximum voltage (line to line)  |  |
|        | a) Primary  | 145kV  |
|        | b) Secondary  | 36kV   |
|        | c) Tertiary (If Provided)   | 12kV   |
| 9.     | Rated Voltage (line to line)  |  |
|        | a) Primary  | 132kV  |
|        | b) Secondary  | 33kV   |
|        | c) Tertiary (If Provided)   | 11kV   |
| 10.    | Insulation level of winding   |  |
|        | a) Basic impulse level as per IEC 76  |  |
|        | - Primary   | 650kV (crest)  |
|        | - Secondary   | 170kV (crest)  |
|        | - Tertiary (if provided)  | 75kV (crest)   |
|        | b) Power frequency induced over voltage (1 minute)                                    |  |
|        | - Primary   | 275kV  |
|        | - Secondary   | 70kV   |
|        | - Tertiary (if provided)  | 28kV   |
| 11.    | Connections   |  |
|        | a) Primary  | Star   |
|        | b) Secondary  | Star   |
| 12.    | Vector group reference  | YNyn0d11   |
| 13.    | Type of tap changer   | On-load  |
| 14.    | Range of taps   | ± 10%  |
| 15.    | Number of taps  | 17   |
| 16.    | Method of tap changer control   |  |
|        | - Mechanical local  | Yes  |
|        | - Electrical local  | Yes  |
|        | - Electrical remote   | Yes  |
|        | "MASTER-FOLLOWER-INDEPENDENT" and "AUTO-MANUAL" selection                             | Yes  |
| 17.    | Percent impedance voltage at rated MVA and 75 °C<br>On tap 1<br>On tap 9<br>On tap 17 | 12.50%<br>(percentage impedance shall match with that of existing transformer for Parallel |



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|     |   |   |
|-----|---|---|
|     |   | Operation)  |
| 18. | System grounding  | Solidly grounded  |
| 19. | Neutral terminals & BCT                                   |   |
|     | - Primary   | yes, required   |
|     | - Secondary   | yes, required   |
| 20. | Tank Mounted Lightning Arrester                           |   |
|     | HV  | No  |
|     | LV  | Yes   |
| 21. | Bushing Current Transformers                              |   |
|     | a. Number of core & current ratio<br>(HV Phase & Neutral) | 1 * 450/1A<br>To be finalized during<br>drawing approval  |
|     | b. Number of core & current ratio<br>(LV Phase & Neutral) | 1 * 1800/1A<br>To be finalized during<br>drawing approval |
|     | c. Accuracy class   | PS class  |

## APPENDIX 2.2: TECHNICAL PARTICULARS OF 132/33kV, 63MVA POWER TRANSFORMERS

| S. No. | Description  | Required data for 132/33kV<br>40/51.5/63MVA Transformer |
|--------|--|---|
| 1.     | Rated capacity   | 40/51.5/63MVA   |
| 2.     | Quantity required                                      | Two (2) Nos.  |
| 3.     | Type   | Outdoor, Oil-immersed                                   |
| 4.     | Type of cooling  | ONAN / ONAF1 / ONAF2<br>(40/51.5/63MVA)                 |
| 5.     | Temperature rise above 40 degree C ambient temperature |   |
|        | a) In oil by thermometer                               | 50 degree C   |
|        | b) In winding by resistance                            | 55 degree C   |
| 7.     | Number of phases                                       | 3 (three)   |
| 8.     | Maximum voltage (line to line)                         |   |
|        | a) Primary   | 145kV   |
|        | b) Secondary   | 36kV  |
|        | c) Tertiary(If Provided)                               | 12kV  |
| 9.     | Rated Voltage (line to line)                           |   |
|        | a) Primary   | 132kV   |
|        | b) Secondary   | 33kV  |
|        | c) Tertiary(If Provided)                               | 11kV  |
| 10.    | Insulation level of winding                            |   |
|        | a) Basic impulse level as per IEC 76                   |   |
|        | - Primary  | 650kV (crest)   |
|        | - Secondary  | 170kV (crest)   |
|        | - Tertiary (if provided)                               | 75kV (crest)  |
|        | b) Power frequency induced over voltage (1 minute)     |   |
|        | - Primary  | 275kV   |
|        | - Secondary  | 70kV  |
|        | - Tertiary (if provided)                               | 28kV  |



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|     |   |  |
|-----|---|--|
| 11. | Connections   |  |
|     | a) Primary  | Star   |
|     | b) Secondary  | Star   |
| 12. | Vector group reference  | YNyn0  |
| 13. | Type of tap changer   | On-load  |
| 14. | Range of taps   | $\pm 10\%$   |
| 15. | Number of taps  | 17   |
| 16. | Method of tap changer control   |  |
|     | - Mechanical local  | Yes  |
|     | - Electrical local  | Yes  |
|     | - Electrical remote   | Yes  |
|     | "MASTER-FOLLOWER-INDEPENDENT" and "AUTO -MANUAL" selection                            | Yes  |
| 17. | Percent impedance voltage at rated MVA and 75 °C<br>On tap 1<br>On tap 9<br>On tap 17 | 12.30-12.5%  |
| 18. | System grounding  | Solidly grounded                                       |
| 19. | Neutral terminals & BCT   |  |
|     | - Primary   | yes, required  |
|     | - Secondary   | yes, required  |
| 20. | Tank Mounted Lightning Arrester   |  |
|     | HV  | No   |
|     | LV  | Yes  |
| 21. | Bushing Current Transformers  |  |
|     | a. Number of core & current ratio (HV Phase & Neutral)                                | 1 * 300/1A<br>To be finalized during drawing approval  |
|     | b. Number of core & current ratio (LV Phase & Neutral)                                | 1 * 1200/1A<br>To be finalized during drawing approval |
|     | c. Accuracy class   | PS class   |

### APPENDIX 2.3: TECHNICAL PARTICULARS OF 132/11kV, 45MVA POWER TRANSFORMERS

| S. No. | Description  | Required data for 132/11kV 45MVA Transformer |
|--------|--|--|
| 1.     | Rated capacity   | 31.5/45MVA                                   |
| 2.     | Quantity required                                      | Two (2) Nos.                                 |
| 3.     | Type   | Outdoor, Oil-immersed                        |
| 4.     | Type of cooling  | ONAN / ONAF                                  |
| 5.     | Temperature rise above 40 degree C ambient temperature |  |
|        | a) In oil by thermometer                               | 50 degree C                                  |
|        | b) In winding by resistance                            | 55 degree C                                  |
| 7.     | Number of phases                                       | 3 (three)                                    |
| 8.     | Maximum voltage (line to line)                         |  |
|        | a) Primary   | 145kV  |



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|     |   |  |
|-----|---|--|
|     | b) Secondary  | 12kV   |
| 9.  | Rated Voltage (line to line)  |  |
|     | a) Primary  | 132kV  |
|     | b) Secondary  | 11kV   |
| 10. | Insulation level of winding   |  |
|     | a) Basic impulse level as per IEC 76  |  |
|     | - Primary   | 650kV (crest)  |
|     | - Secondary   | 75kV (crest)   |
|     | b) Power frequency induced over voltage (1 minute)                                    |  |
|     | - Primary   | 275kV  |
|     | - Secondary   | 28kV   |
| 11. | Connections   |  |
|     | a) Primary  | Star   |
|     | b) Secondary  | Star   |
| 12. | Vector group reference  | YNyn0  |
| 13. | Type of tap changer   | On-load  |
| 14. | Range of taps   | ± 10%  |
| 15. | Number of taps  | 17   |
| 16. | Method of tap changer control   |  |
|     | - Mechanical local  | Yes  |
|     | - Electrical local  | Yes  |
|     | - Electrical remote   | Yes  |
|     | "MASTER-FOLLOWER-INDEPENDENT" and "AUTO-MANUAL" selection                             | Yes  |
| 17. | Percent impedance voltage at rated MVA and 75 °C<br>On tap 1<br>On tap 9<br>On tap 17 | 12.30%<br>(percentage impedance shall match with that of existing transformer) |
| 18. | System grounding  | Solidly grounded   |
| 19. | Neutral terminals & BCT   |  |
|     | - Primary   | yes, required  |
|     | - Secondary   | yes, required  |
| 20. | Tank Mounted Lightning Arrester   |  |
|     | HV  | No   |
|     | LV  | Yes  |
| 21. | Bushing Current Transformers  |  |
|     | b. Number of core & current ratio<br>(HV Phase & Neutral)                             | 1 * 200/1A<br>To be finalized during drawing approval                          |
|     | d. Number of core & current ratio<br>(LV Phase & Neutral)                             | 1 * 2500/1A<br>To be finalized during drawing approval                         |
|     | e. Accuracy class   | PS class   |



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## APPENDIX 2.4: TECHNICAL PARTICULARS OF 33/11kV, 24MVA POWER TRANSFORMER

| S.No. | Description   | Required data for 33/11kV Transformer           |
|-------|---|---|
| 1.    | Rated capacity  | 20/24 MVA                                       |
| 2.    | Quantity required   | Six (6) Nos.                                    |
| 3.    | Type  | Outdoor, Oil-immersed                           |
| 4.    | Type of cooling   | ONAN / ONAF (20/24 MVA)                         |
| 5.    | Temperature rise above 40 degree C ambient temperature  |   |
|       | a) In oil by thermometer  | 50 degree C                                     |
|       | b) In winding by resistance   | 55 degree C                                     |
| 6     | Number of phases  | 3(three)  |
| 7     | Maximum voltage (line to line)  |   |
|       | a) Primary  | 36kV  |
|       | b) Secondary  | 12kV  |
| 8     | Rated Voltage (line to line)  |   |
|       | a) Primary  | 33kV  |
|       | b) Secondary  | 11kV  |
| 9     | Insulation level of winding   |   |
|       | a) Basic impulse level as per IEC 76  |   |
|       | - Primary   | 170 kV (peak)                                   |
|       | - Secondary   | 75 kV (peak)                                    |
|       | b) Power frequency induced over voltage (1 minute)  |   |
|       | - Primary   | 75 kV (rms)                                     |
|       | - Secondary   | 28 kV (rms)                                     |
|       | Noise level   |   |
|       | a) On ONAN rating   | <73 dB  |
|       | c) On ONAF- rating  | <75 dB  |
| 10    | Connections   |   |
|       | a) Primary  | Delta   |
|       | b) Secondary  | Star  |
| 11    | Vector group reference  | Dyn11   |
| 12    | Magnitude of IIIrd harmonics voltage as of fundamental frequency  | % <2  |
| 13    | Type of tap changer   | On-load   |
| 14    | Range of taps   | ± 10 %  |
| 15    | Number of taps  | 17  |
| 16    | Method of tap changer control   |   |
|       | - Mechanical local  | Yes   |
|       | - Electrical local  | Yes   |
|       | - Electrical remote   | Yes   |
|       | "MASTER-FOLLOWER-INDEPENDENT" and "AUTO -MANUAL" selection  | Yes   |
| 17    | Percent impedance voltage at rated MVA and 75 degree C .<br>On tap 1 (ONAF2)<br>On tap 9 (ONAF2)<br>On tap 17 (ONAF2) | 12.81%<br>12.18%<br>(percentage impedance shall |



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|     |  |  |
|-----|--|--|
|     |  | match with that of existing transformer)               |
| 18. | System grounding   |  |
|     | a) Primary   | Solidly grounded                                       |
|     | b) Secondary   | Solidly grounded                                       |
| 19  | Neutral terminals & BCT  |  |
|     | - Primary  | yes, required  |
|     | - Secondary  | yes, required  |
| 20  | Tank Mounted Lightning Arrester                                |  |
|     | HV   | Yes  |
|     | LV   | Yes  |
| 21  | Bushing Current Transformers                                   |  |
|     | a) Number of core / Burden /current ratio (HV Phase & Neutral) | 1 * 500/1A<br>To be finalized during drawing approval  |
|     | b) Number of core / Burden /current ratio (LV Phase & Neutral) | 1 * 1500/1A<br>To be finalized during drawing approval |
|     | c) Accuracy class  | PS class   |

#### APPENDIX 2.5: REMOTE TAP CHANGER PANEL

| Item | Legend          | Description  | Quantity per Panel               |
|------|-----------------|--|----------------------------------|
| 1.   | ANN             | Annunciator assembly, 12 active points, 110V DC, 6 rows high by 2 columns wide, flush mounted; with 3-separately mounted push buttons<br><br>1. Fan Bank Fail<br>2. OLTC Power supply Fail<br>3. Tap changer Out of step<br>4. Transformer Cooling system Fail<br>5. Tap changer Temperature High<br>6. AC Fail<br>7. DC Fail<br>All the rest points are for spare | 1 Lot                            |
| 2    | Relay<br><br>90 | Only main instruments are listed here. All the auxiliary equipments required for satisfactory operation of the scheme shall be included by the Contractor.<br>a. AVR as short listed, with future provision for parallel operation.<br>b. Tap Position Indicator<br>c. AC Relay & Under Voltage Protection Relay<br>d. D.C. fail relay, if required                | 1 Lot<br>1 Lot<br>1 Lot<br>1 Lot |
| 3    |                 | Interlocks, Switching & tripping Relay (where Required)  | 1 Lot                            |
| 4.   | V               | Indicating Voltmeter<br>For specified PT ratios (For 1 Amp Secondary).   | 1 Lot                            |
| 5.   |                 | Indication lamps for status indications  | 1 Lot                            |



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|    |  |   |  |
|----|--|---|--|
| 6. |  | Other relays and equipments required as per specs and satisfactory operation of the transformer |  |
|----|--|---|--|

#### **APPENDIX 2.5: TRANSFORMER ACCESSORIES**

Each transformer furnished under this specification shall be equipped with the following:

1. Oil conservator with two compartments each with filler caps and drain plugs.
2. Two sets of Silica Gel breathers with connecting pipe and oil seal.
3. Air release plug.
4. Double float Buchholz Relay with electrically separate trip and alarm contacts for transformer tank.
5. Two Nos. of shut-off valves at both sides of each Buchholz Relay.
6. Mechanically operated self-resetting type pressure relief device with visible operation indicator and trip contact.
7. 150mm Dial Magnetic Oil Level Gauge with low level alarm contact.
8. Direct Reading Oil Level Gauge.
9. 150mm. Dial Oil Temperature Indicator with maximum reading pointer and individually adjustable electrically separate sets of contact for alarm and trip.
10. 150mm Dial Winding Temperature Indicator with individually adjustable electrically separate sets of contact for two stage cooler control, alarm and trip with detector element complete with heating coil, CT's etc.
11. Drain valve with threaded adapter.
12. Sample valve (top and bottom)
13. Filter valves with threaded adapter (top and bottom)
14. Cover lifting eyes
15. Jacking pads, hauling and lifting lugs.
16. Bi-directional flanged wheels.
17. Rails
18. Clamping device with nuts and bolts for clamping the transformer on foundation rails.
19. Ladder with safety device for access to the transformer top and Buchholz Relay.
20. Ground pads each with two (2) nos. tapped holes, bolts and washer for transformer tank, radiator bank.
21. Rating plate and terminal marking plate.
22. Marshaling box for housing control equipment and terminal connections.
23. Any other standard accessories including arcing horns.



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## SECTION I, PART 3

### SWITCHGEAR EQUIPMENT





## SECTION I, PART 3

### SWITCHGEAR EQUIPMENT

#### 1 OUTDOOR CIRCUIT BREAKER

##### 1.1 GENERAL

This specification covers the design, manufacture, assembly, shop test, supply, delivery, installation works, field test and commissioning of outdoor circuit breaker complete with all accessories for efficient and trouble free operation as specified herein under.

The equipment specified in this Section shall conform to the latest edition of the appropriate IEC specifications and/or other recognized international standards. In particular:

- IEC 60056 High-voltage alternating switchgear
- IEC 62271 High-voltage alternating switchgear and control-gear
- IEC 60376 Specification and acceptance of new sulphur hexafluoride
- IEC 60529 Degree of protection provided by enclosures
- IEC 60694 Common specifications for high-voltage switchgear and controlgear standards

##### Short Listed Manufacturers:

**SF6 Circuit Breakers shall be from: ABB, AREVA (Formerly ALSTOM), CGL, Hitachi, Siemens, Toshiba/Mitsubishi, LG, Fuji, GE, Schnieder Electric.**

**VCB shall be from ABB, AREVA, CGL, Hitachi, Siemens, Mitsubishi, LG, Fuji, GE, Jyoti, Schnieder Electric.**

##### 1.2 DESIGN REQUIREMENTS

The circuit breakers shall be suitable for 3 phase, 50 Hz. and shall be installed outdoor in the vicinity of industries.

All equipment and accessories shall be provided with sub-tropical finish to prevent fungus growth.

The maximum temperature rise in any part of the equipment at specified rating shall not exceed the permissible limits as stipulated in relevant standards.

The rated peak short circuit current or the rated short time current carried by the equipment shall not cause:

- (a) mechanical damage to any part of the equipment
- (b) separation of contacts
- (c) insulation damage of "Current Carrying Part"



Technical particulars of the circuit breaker shall be as specified in the appendix .

All auxiliary equipment shall be suitable for 3 phase-4 wires, 400V or single phase 230 V, 50 Hz system. All controls shall be suitable for 110V DC.

### 1.3 CONSTRUCTION FEATURES

The circuit breaker shall be outdoor, three-phase, (single-throw), spring charged motor operated, trip-free in any position, complete with operating mechanism and supporting structure.

The 145kV circuit breaker shall be SF6 gas type, whereas the 12kV circuit breaker shall be vacuum type.

#### Reclosing operation

The circuit breaker for outgoing / incoming line for voltage level 66 kV and above shall be capable of making reclosing operation.

#### Contacts

The contacts shall be designed to have adequate thermal and current carrying capacity for carrying full-rated current without exceeding the allowable temperature rise as specified by IEC standards. They shall be designed to have long life so that frequent replacement or maintenance will be unnecessary. The surfaces of either of both moving and stationary arcing-contacts that are exposed directly to the arc shall be faced with suitable arc resisting material.

#### Gas Density Detector for SF6 circuit breaker

The circuit breaker shall be provided with gas density detector, responding to the gas temperature and pressure, which shall have two different functions according to the gas condition: the first step gives alarm and the second step locks the operating mechanism. A gauge shall also be provided to indicate the gas-pressure.

#### Vacuum Interrupter for vacuum circuit breaker

Vacuum interrupter, which makes use of the excellent dielectric properties, should confirm to obtain a highly reliable extinguishing device such as to quench the arc as soon as possible without causing the visible formation of the arc. There should not be any deterioration of the quenching medium. The design and manufacturing technology of the interrupter should ensure the vacuum integrity. The recovery should be faster and hence the arc quenching should be accomplished within the adequate contact gap to support the required rating. The contact surface should be free of impurities and pollution layers. Materials of high conductivity should be used such that the contact resistance will be very low. During switching, the Breaker should be **re-strikes free**.

#### Local Test Switch



Each mechanism shall be equipped with a local test switch for electrically testing the closing and tripping operations of the circuit breaker. A separate manually operated cut-out device to disconnect the circuits from remote closing, reclosing and tripping devices shall be provided on each circuit breaker. A warning nameplate requiring operation of this device before operation of the local test switch shall be mounted adjacent to the local test switch.

#### Emergency Trip

Each circuit breaker shall be provided with an emergency hand trip device. This device shall be provided with mechanically interlocked contacts to disconnect circuits from remote closing and reclosing devices. The trip button shall be mounted in such a way that it can be operated from outside of the operating box.

#### Position Indicator

The circuit breaker shall be equipped with easily visible mechanical position indicator. The indicator shall be provided for each pole.

#### Tripping Circuit

Two (2) sets of tripping coils shall be provided in two separate current and magnetic circuits in order to make possible primary and backup tripping of circuit breaker. Provision for trip circuit supervision shall be provided.

The tripping circuit mechanism and the closing control circuit mechanism shall each have a nominal voltage rating of 110 volts DC. The tripping circuit shall operate satisfactorily for a tripping operation over a voltage range of 70-110%. The closing control circuit shall operate satisfactorily over a voltage range of 85-110%.

#### Motor-operated Spring-Charged Mechanism

A complete and separate spring-operating system shall be furnished and installed to operate the circuit breaker. Closing action of breaker shall charge the opening spring for tripping.

Each operating mechanism shall be provided with a spring charging motor with a common control cabinet.

- The time required to charge the closing spring after the closing operation shall not exceed 30 seconds.
- Under voltage alarm relay suitable for operation on DC circuit to permit remote indication of loss of potential on the AC to the controlgear.
- Spring charged indicator shall indicate the state of energy store in the spring. Indication for fully charged spring shall be provided both at local and remote control panel.



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- Means shall be provided to prevent the operation of the mechanism when maintenance work is being done. The mechanism shall be so arranged that emergency manual charging and release of the spring is possible without electrical means. One (1) CO-operation shall be possible after failure of supply.

### Operating Cubicle

Circuit breaker operating mechanisms, auxiliary switches and associated relays, control switches, control cable terminations, and other ancillary equipment shall be housed in sheet steel vermin-proof and weatherproof cubicles. The enclosure protection of the cubicle shall be IP55W. Where appropriate, the cubicles may be free standing with front and rear access.

Cubicles shall be of rigid construction, preferably folded but alternatively formed on a framework of standard rolled steel sections and shall include any supporting steel work necessary for mounting on the circuit breaker or on concrete foundations. The thickness of the sheet steel shall be at least 2 mm. All fastenings shall be integral with the panel or door and provision made for locking. Doors shall be rigid and fitted with weatherproof sealing materials suitable for the climatic conditions specified.

Cubicles shall be well ventilated thorough vermin-proof louvers comprising a brass gauze-screen attached to a frame and secured to the inside of the cubicle. Divisions between compartments within the cubicle shall be perforated to assist air circulation. In addition, thermostat- controlled space heater with ON-OFF switches rated 230 V, 1 phase, 50 Hz shall be provided to prevent condensations within the cubicle.

A local control switch connected with a remote-local selector switch shall be furnished and wired in the control circuits of the breaker. The local control switch shall be operative from within the operating cubicle only when the selector switch is in local position.

### SF6 Gas

The amount of SF6 gas furnished, conforming to IEC 60376, shall at least be sufficient for filling all breaker. The SF6 gas shall be supplied in non-returnable steel bottles.

### Bushings

The bushings shall be of the porcelain gas filled, designed to have ample insulation, mechanical strength and rigidity for the conditions under which they will be used.

### Accessories

The Contractor shall furnish following accessories as an integral part of each circuit breaker:

- (a) Padlocks and duplicate keys
- (b) Space heaters equipped with thermostatic controls



- (c) Local / remote control switch
- (d) Operation counter
- (e) Earthing pad (two)
- (f) Terminal boards with six spare terminals
- (g) Two earthing terminals
- (h) Auxiliary relays
- (i) Motor contactor with thermal release for spring charging motor
- (j) Nameplate
- (l) Other necessary accessories

### **Spare Parts**

For each type of circuit breaker, the spare parts shall be provided in required quantities as listed in Price Schedule. Further spare parts as recommended by the manufacturer shall also be included in the Price Schedule. The Spare parts, if any not required by NEA, shall be deducted from the Contract during Contract signing.

## **1.4 TESTS**

### **Routine Tests**

On completion each circuit breakers shall be subjected to following routine tests. As far as practical, the procedure of IEC shall be followed:

- (a) Construction Inspection
- (b) Leakage Test (for SF6 circuit breaker)
- (c) Operating Speed Check
- (d) Dielectric test
- (e) Control and secondary wiring check test
- (f) Mechanical operation test
- (g) Operating mechanism system check
- (h) Voltage withstand test on auxiliary circuits
- (i) Measurement of resistance of main circuit of each pole



- (j) Power frequency voltage withstand test on main circuit of each pole and the combination of poles and breaker frame.

#### Design Tests

Following design tests shall be performed on the offered model.

The circuit breaker design tests shall include following:

- (a) Dielectric withstand test
- (b) Temperature rise test
- (c) Radio interference voltage test
- (d) Short-time withstand current and peak withstand current tests
- (e) Verification of the protection
- (f) Electromagnetic compatibility tests

The Bidder shall submit copy of design test report from recognized testing laboratory for the circuit breaker of the offered model along with the bid.

#### Field Tests

After installation at Site, the circuit breaker shall be subjected to the following field tests:

- (a) Construction inspection
- (b) Measurement of insulation resistance of main and auxiliary circuits
- (c) Operating speed check
- (d) Mechanical operation test
- (e) Operating mechanism system check
- (f) Anti-pumping test

### **1.5 PERFORMANCE GUARANTEE**

The performance guarantee figures quoted on the schedule of Technical Data shall be guaranteed within the tolerances permitted by relevant standard and will become a part of successful Bidder's Contract.

### **1.6 DRAWINGS, DATA AND MANUAL**

The outline drawings of the breaker and control cubicle with accessories shall be furnished along with the Bid.



After award of Contract the successful Bidder shall submit the required number of copies of the following drawings and data for approval of the Employer.

- (a) General equipment layout
- (b) Outline drawings of the breaker and control cubicle with accessories
- (c) Loading data and foundation detail
- (d) Elementary control wiring diagrams
- (e) Internal wiring diagrams
- (f) External connection diagrams, showing terminal boards and other external Connection points for each assembly and the required interconnecting wiring
- (g) Drawings showing typical cross-sections of the operating mechanism and the breaker mechanism
- (h) Drawings showing typical cross-section and assembly of interrupting device
- (i) Drawings showing assembly of principal component parts and accessories
- (j) Drawings showing details of bushings or porcelain supporting columns, including dimension details of flanges and outline dimensions
- (k) Drawing to show details at all points where adjustments may be made to operating dimension mechanism, breaker mechanism and contact
- (l) Any other drawings and data required for design and installation of circuit breaker.
- (m) Instruction manual for storage, installation, operation and maintenance of circuit breaker and operating mechanism.

## 1.7 NAMEPLATE

Circuit breaker shall be provided with a nameplate of weather-resistant material fitted in a visible position. It shall show the following items as a minimum.

- (a) Circuit Breaker (Note: Circuit breaker and operating cubicle nameplates may be combined)
  - Manufacturer's name
  - Manufacturer's serial number and type designation
  - Year of manufacture



- Rated voltage, kV
  - Rated insulation level, kV
  - Rated frequency, Hz
  - Rated nominal current, A
  - Rated short-circuit breaking current, kA
  - Rated short circuit making current, kA
  - Rated operating cycle (duty cycles)
  - Rated short time current & duration, kA/s
  - Rated operating sequence (duty cycles)
  - Type of operating mechanism
  - First pole to clear factor
  - Rated interrupting time, cycles
  - Rated operating pressure (SF6), kg/cm<sup>2</sup>
  - Weight of circuit breaker, kg
  - Parts list number
- (b) Operating cubicle (Note: Operating cubicles and circuit breaker nameplates may be combined.)
- Manufacturer's name
  - Manufacturer's serial number and type designation
  - Year of manufacture
  - Rated supply-voltage of closing and opening devices, V
  - Rated supply-frequency of closing and opening devices, Hz
  - Closing current, A
  - Tripping current, A
  - Rated supply-voltage of auxiliary circuits, V
  - Rated supply-frequency of auxiliary circuits, Hz



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- Parts list number

## 1.8 SPECIAL TOOLS

In addition to the tools, which are regularly furnished with such breakers, the Contractor shall also supply all necessary special tools or equipment for assembling and disassembling the breaker. The Contractor shall submit an itemised list of such equipment in the Price Schedule.



### **APPENDIX 3.1**

#### **TECHNICAL PARTICULARS OF SF6 CIRCUIT BREAKERS**

|     |   |  |
|-----|---|--|
| 1.  | Type  | SF6, outdoor type  |
| 2.  | Voltage rating:<br>a) Nominal system voltage<br>b) Rated maximum voltage  | 132 kV<br>145 kV   |
| 3.  | Insulation level<br>a) Impulse withstand voltage<br>b) Power-frequency withstand voltage (1 min.)   | 650kV (crest)<br><b>275kV (crest)</b>                          |
| 4.  | Frequency   | 50 Hz  |
| 5.  | Current rating<br>a) Rated continuous current at 40 degree C ambient<br>b) Short circuit breaking current<br>c) Short circuit making current                                  | 1250 A<br>25 kA<br>62.5 kA                                     |
| 6.  | Creepage distance   | 3300 mm  |
| 7.  | Auxiliary supply<br>a) Control circuit<br>b) Space heater and auxiliary equipment.  | 110 V DC<br>AC, 230/400V, 50 Hz                                |
| 8.  | Operation   | Three-pole operation type                                      |
| 9.  | Number of possible operations without maintenance :<br>For breaker contact with:<br>- Rated short circuit breaking current (25 kA)<br>- Rated normal current<br>For mechanism | Not less than 10<br>Not less than 2,000<br>Not less than 2,000 |
| 10. | Reclosing duty cycle  | O-0.3 sec-CO-3 min-CO  |
| 11. | Total maximum break time  | 60 ms  |
| 12. | First pole to clear factor  | 1.3  |
| 13. | Additional Auxiliary Contacts   | 8 NO, 8 NC   |
| 14. | Maximum make time   | 120 ms   |
| 15. | Spring charging motor   | 110 V DC   |



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### **APPENDIX 3.2**

#### **TECHNICAL PARTICULARS OF 33KV VACUUM CIRCUIT BREAKERS**

|     |   |                            |
|-----|---|----------------------------|
| 1.  | Type  | Vacuum, outdoor type       |
| 2.  | Voltage rating:                                     |                            |
|     | a) Nominal system voltage                           | 33 kV                      |
|     | b) Rated maximum voltage                            | 36 kV                      |
| 3.  | Insulation level                                    |                            |
|     | a) Impulse withstand voltage                        | 170 kV (crest)             |
|     | b) Power-frequency withstand voltage (1 min.)       | 75 kV (crest)              |
| 4.  | Frequency   | 50 Hz                      |
| 5.  | Current rating                                      |                            |
|     | a) Rated continuous current at 40 degree C ambient  | 2000 A                     |
|     | b) Short circuit breaking current                   | 25 kA                      |
|     | c) Short circuit making current                     | 62.5 kA                    |
| 6.  | Creepage distance                                   | 825 mm                     |
| 7.  | Auxiliary supply                                    |                            |
|     | a) Control circuit                                  | 110 V DC                   |
|     | b) Space heater and auxiliary equipment.            | AC, 230/400V, 50 Hz        |
| 8.  | Operation   | Three -pole operation type |
| 9.  | Number of possible operations without maintenance : |                            |
|     | For breaker contact with:                           |                            |
|     | - Rated short circuit breaking current (25 kA)      | Not less than 10           |
|     | - Rated normal current                              | Not less than 5,000        |
|     | For mechanism                                       | Not less than 5,000        |
| 10. | Reclosing duty cycle                                | O-0.3 sec-CO-3 min-CO      |
| 11. | Total maximum break time                            | 60 ms                      |
| 12. | First pole to clear factor                          | 1.5                        |
| 13. | Additional Auxiliary Contacts                       | 8 NO, 8 NC                 |
| 14. | Maximum make time                                   | 120 ms                     |
| 15. | Spring charging motor                               | 110 V DC                   |



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## ***SECTION I, PART 4***

# **SPECIFICATION OF INSTRUMENT TRANSFORMER**



## SECTION I, PART 4 SPECIFICATION OF INSTRUMENT TRANSFORMER

### 1 GENERAL

This specification covers the design, manufacture, assembly, shop test, supply, delivery, installation works, field test and commissioning of outdoor and indoor instrument transformers as specified hereunder.

The equipment specified in this Section shall conform to the latest edition of the appropriate IEC specifications and/or other recognized international standards. In particular:

- IEC 60044 Voltage transformers
- IEC 60044 Instrument transformers
- IEC 60529 Degree of protection provided by enclosures

### 2 DESIGN REQUIREMENTS

- 2.1 Instrument transformers shall be suitable for 50Hz, 3 phases with solidly grounded neutral system.
- 2.2 Instrument transformers shall be installed outdoor in a hot and humid climate. All equipment and accessories shall be provided with tropical finish to prevent fungus growth.
- 2.3 Capacitor voltage transformers shall be provided with accessories suitable for carrier equipment.
- 2.4 Technical particulars of instrument transformers shall be as per Appendices.
- 2.5 Burden of the instrument transformers stated herein is the minimum value required. Where higher burden is required to suit the designs, the Contractor shall supply the same without additional cost.

### 3 CONSTRUCTION FEATURES

- 3.1 The instrument transformers of 132 kV & 66kV shall be oil-filled construction and shall be designed for outdoor service and suitable for vertical mounting.
- 3.2 The core and coils of current transformer shall be mounted in a steel tank on the top of the unit with the primary coil leads extending through insulated bushings for series or multiple connections. A steel base shall support the high voltage bushing and tank. The high voltage bushing shall be sealed to the tank and the base with oil-tight joints.
- 3.3 The coupling capacitor voltage transformers shall be of high Capacitance (*minimum 8800 pF*) with three nominal voltage outputs of  $110/\sqrt{3}$  volts each. They will be used for carrier service at the line terminations, must be suitable for revenue metering and shall be equipped with carrier accessories. Each of these CVTs shall be furnished with necessary length of lead-in type single-conductor cable suitable for connection to the associated line-tuning unit. Capacitor Voltage Transformers shall have a RF choke coil between the capacitor divider intermediate tap and the electromagnetic portion of the CVT to prevent leakage of carrier current. Bidders shall note that it is a compulsory requirement.



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- 3.4 The primary terminals of instruments shall include provisions for externally connecting the primary winding. The secondary terminals shall be enclosed in a weatherproof terminal box.
- 3.5 Porcelain bushings shall have adequate mechanical and electrical strength. The color of porcelain shall be brown.
- 3.6 The Current Transformers & Voltage Transformers of 33 kV voltage level shall be Oil Insulated type suitable for outdoor mounting.
- 3.7 Junction Boxes

Junction boxes shall be rigid weatherproof type complete with terminal blocks suitable for cable size having the range up to  $2 \times 6\text{mm}^2$  for termination of the secondary connections (such as delta or wye connection). They shall be made of metal, which will resist corrosion on both inside, and outside surfaces, otherwise galvanizing shall suitably protect them. Cover of the junction box shall be of hinge door type complete with door handle. Two drainage holes shall be provided at the bottom of the junction box. In case the junction boxes are steel sheet, the thickness of such steel sheet shall be at least 1.2 mm. Junction boxes shall be sized and arranged to provide easy access for external cables and adequate space for internal wiring and installed equipment. Enclosure protection class of the junction boxes shall be IP55W.

3.8 Terminations

(a) Current Transformers

All current transformer secondary-winding terminals for each ratio shall be connected to terminals on terminal blocks located in the junction boxes.

(b) Capacitive Voltage Transformer / Voltage Transformer

All CVTs' secondary terminals (for each core) shall be connected to terminals for each ratio on terminal blocks located in the junction boxes.

3.9 Accessories

The following items shall be provided for each instrument transformer:

- (a) Nameplate
- (b) Oil level gauge
- (c) Oil valves or plugs
- (d) Power factor test terminals
- (e) Necessary terminal connections
- (f) Grounding terminals
- (g) Other necessary accessories

**4 TESTS**

Tests shall be performed as specified hereunder.

4.1 Current transformer



(a) Routine tests

Each current transformer shall be subjected to following routine tests. As far as practical, the procedure of IEC shall be followed:

- Verification of terminal markings
- Power frequency withstand test (primary & secondary)
- Partial discharge measurement
- Power frequency withstand test between sections of primary & secondary windings
- Inter turn over voltage test
- Determination of errors

(b) Design tests (Type Test)

The current transformer design tests shall include following:

- Short time current tests
- Temperature rise test
- Power frequency withstand voltage (wet) tests
- Lightning impulse withstand tests
- Switching impulse withstand tests
- Radio interference voltage measurement test

The Bidder shall submit copy of design test report from recognized testing laboratory for the instrument transformers of the offered model along with the bid.

4.2 (i) Capacitor Voltage Transformer (N/A)

(a) Routine Tests

Each capacitive voltage transformer shall be subjected to following routine tests. As far as practical, the procedure of IEC shall be followed:

- Capacitance and dissipation factor measurement of the capacitor divider before and after power frequency withstand voltage (dry) test
- Power frequency withstand voltage (dry) test for capacitor divider
- Dielectric tests for electromagnetic unit



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- Accuracy tests
- Polarity check
- Applied and Induced over voltage test, etc.

(b) Design Tests (Type Test)

The capacitive voltage transformer design tests shall include following:

- Impulse tests
- Ferro-resonance tests
- Temperature rise tests

(ii) Inductive Voltage Transformer

(a) Routine Tests

Each voltage transformer shall be subjected to following routine tests. As far as practical, the procedure of IEC shall be followed:

- Verification of terminal marking
- Power frequency withstand test on primary winding
- Partial discharge measurement
- Power frequency withstand test on secondary winding
- Power frequency withstand test on between sections
- Determination of error

(b) Design Tests (Type Test)

The inductive voltage transformer design tests shall include following:

- Temperature rise test
- Short circuit withstand capability test
- Lightning impulse test
- Switching impulse test
- Measurement of the radio interference voltage

4.3 Field Tests





After installation at site, all instrument transformers shall be subjected but not limited to the following tests:

- (a) Construction inspection
- (b) Polarity check
- (c) Ratio test
- (d) Measurement of insulation resistance

## **5 DRAWINGS, DATA AND MANUALS**

5.1 The outline dimensional drawings of the equipment shall be furnished with the Bid.

5.2 After award of Contract the required number of copies of the following drawings for approval of the Employer.

- (a) Outline dimensional drawings of the equipment
- (b) Transport/shipping dimensions with weights
- (c) Foundation and anchor bolt details
- (d) Characteristic and performance data including ratings, ratio and phase angle curves, accuracy for standard burdens, and thermal burden ratings
- (e) Instruction books including technical description and complete information for installation, testing, operation and maintenance with renewal parts data
- (f) Any other relevant drawings and data necessary for review of the items stated above.



#### **APPENDIX 4.1**

#### **TECHNICAL PARTICULARS OF 132 kV CURRENT TRANSFORMERS**

|     |   |   |
|-----|---|---|
| 1.  | Type  | Oil Insulated Type  |
| 2.  | Rated primary voltage   | 132 kV  |
| 3.  | Maximum system voltage  | 145 kV  |
| 4.  | Impulse withstand voltage   | 650 (crest)   |
| 5.  | Rated frequency   | 50Hz  |
| 6.  | Number of core  | 5   |
| 7.  | Short time thermal ratings  | 25 kA   |
| 8.  | Current ratio<br>Core 1: Metering<br>Core 2: protection<br>Core 3: Protection<br>Core 4: differential<br>core 5: differential | <i>300-600-900/1A</i><br><i>300-600-900/1A</i><br><i>300-600-900/1A</i><br><i>600-800/1A</i><br><i>600-800/1A</i> |
| 9.  | Rated burden for each core  | 30VA  |
| 10. | Accuracy class  | 5P20 for protection and 0.5 for metering and PS for differential  |
| 11. | Creepage distance   | 3300 mm   |
| 12. | Applicable standard   | IEC 60044-1   |

#### **APPENDIX 4.2**

#### **TECHNICAL PARTICULARS OF 33 kV CURRENT TRANSFORMERS**

|     |                            |  |
|-----|----------------------------|--|
| 1.  | Type                       | Oil Insulated Type   |
| 2.  | Rated primary voltage      | 33 kV  |
| 3.  | Maximum system voltage     | 36 kV  |
| 4.  | Impulse withstand voltage  | 170 (crest)  |
| 5.  | Rated frequency            | 50Hz   |
| 6.  | Number of core             | <i>3</i>   |
| 7.  | Short time thermal ratings | 25 kA  |
| 8.  | Current ratio              | <i>1000-2000/1</i><br><i>1000-2000/1</i><br><i>1000-2000/1</i>   |
| 9.  | Rated burden for each core | <i>30 VA</i>   |
| 10. | Accuracy class             | 5P20 for protection and 0.5 for metering and PS for differential |
| 11. | Creepage distance          | 850 mm   |
| 12. | Applicable standard        | IEC 60044-1  |

\* CT ratio and Burden will be decided during drawing approval



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**APPENDIX 4.3**  
**TECHNICAL PARTICULARS OF 33KV POTENTIAL TRANSFORMER**

|    | DESCRIPTION   |   |
|----|---|---|
| 1  | Manufacturer and Country of Origin                                |   |
| 2  | Years of manufacturing experience(Years)                          | 5   |
| 3  | Manufacturer's designation as per submitted catalogue / Model No. | To be furnished                           |
| 4  | Applicable standard   | IEC                                       |
| 5  | Type  | <i>Outdoor Oil immersed</i>               |
| 6  | Frequency,HZ  | 50  |
| 7  | Rated Primary Voltage, KV   | 33  |
| 8  | Insulation level  |   |
|    | a) Impulse withstand voltage,KV(crest)                            | 170                                       |
|    | b) Power frequency withstand voltage (1 min. rms),KV              | 75  |
| 9  | Creepage distance,mm  | 850                                       |
| 10 | Ratings   |   |
|    | a)Voltage ratio kV  | $33/\sqrt{3}/0.11/\sqrt{3}/0.11/\sqrt{3}$ |
|    | b)Rated Burden VA   | 50  |
|    | c)Accuracy class  | 3P&0.5 for metering                       |
|    | d)Overvoltage factor  |   |
|    | continuous  | 1.1                                       |
|    | 30seconds   | 1.5                                       |
|    | e)Connection  |   |
|    | f)Secondary fuse  |   |
|    | Type  |   |
|    | Manufacture   |   |
|    | Amp rating, A   |   |
|    | g)Power factor  | 0.85                                      |
|    | h)Number of secondary windings                                    | 2   |
| 13 | Weight kg   |   |



*[Signature]*



## **APPENDIX 4.4**

### **TECHNICAL PARTICULARS OF 11 kV CURRENT TRANSFORMERS**

|     |  |  |
|-----|--|--|
| 1.  | Type   | Indoor dry type/ cast-resin for protection and metering.       |
| 2.  | Rated primary voltage  | 11 kV  |
| 3.  | Maximum system voltage   | 12kV   |
| 4.  | Impulse withstand voltage  | 75   |
| 5.  | Power frequency withstand voltage  | 28   |
| 6.  | Rated frequency  | 50Hz   |
| 7.  | Number of core   | 3  |
| 8.  | Current Ratio<br>Core-1 (Backup Prot.)<br>Core-2 (Metering)<br>Core-3 (Trf. Diff. Prot.) | <i>1000-2000/1</i><br><i>1000-2000/1</i><br><i>1000-2000/1</i> |
| 9.  | Rated burden for each core   | 15 VA  |
| 10. | Accuracy class   | 5P20 for Protection<br>0.5 for Metering<br>PS for differential |
| 11. | Applicable standard  | IEC  |

\* CT ratio and Burden will be decided during drawing approval



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## **SECTION I, PART 5**

# **SPECIFICATION OF CONTROL & RELAY PANEL**



## SECTION I, PART 5 CONTROL & RELAY PANEL

### 1 GENERAL

- 1.1 This specification covers study, design, manufacture, assembly, factory test, supply, delivery, installation, field test and commissioning of control and relay panels as specified herein under.
- 1.2 It is not the intent to specify completely herein all details of design and construction of equipment to be supplied. The major equipment to be supplied are specified in Appendix, Bill of Material. However, the equipment supplied shall conform, in all respects, to high standards of engineering, design and workmanship and be capable of performing in continuous commercial operation up to Manufacturers' guarantee.
- 1.3 The relays specified in the following articles is based on standard protection schemes generally adopted in 132 kV substations of Employer's Integrated Power System. However, the Contractor shall carry out detail system study of protection system of Integrated Power System with special regard to existing substations in the vicinity of the proposed works. Based on this study, the Contractor shall design a relaying scheme for the substations, prepare a detail relay schedule and recommend relay-setting values for relay co-ordination with existing ones and make all necessary adjustments in the relay settings of neighboring substations as well. *Suitable protection schemes shall be designed for parallel feeders.*
- 1.4 The indication and annunciation schemes intended for existing substations shall be compatible with the existing system as far as possible.
- 1.5 Manufacturers for Protection Equipment

All major protection relays shall be of static/numeric type. Relays shall be only from short listed manufacturers.

**Following equipment shall be supplied only from the manufacturers specified hereunder:**

- a) **The main protection relays shall be form ABB, AREVA, SIEMENS, Fuji, Reyrolle / Eusun Reyrolle, Toshiba, Mitsubishi, GE, Hitachi.**
- b) **Energy Meters: ELSTER (ABB) , ACTARIS (Schlumberger), EDM1, SIEMENS, AMETEK, GE.**
- c) **OLTC and AVR shall be from MR or ABB.**

### 2 CONSTRUCTION FEATURES



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- 2.1 The 132/33kV and 132/11kV panel shall be of duplex type. The duplex type shall be of walk-in tunnel type comprising two vertical front and rear panel sections connected back-to-back by formed sheet steel roof tie members and a central corridor in between. The corridor shall facilitate access to internal wiring and external cable connections. Both ends of the corridor shall be provided with double leaf doors with lift off hinges.

The door openings and corridor shall be a minimum of 0.7 meter wide with no equipment allowed within this width from top to bottom. Doors shall have handles with built-in locking facility. In case of number of duplex panels located in a row side by side, the central corridor shall be aligned to form a continuous passage with the sides of the two end panels provided with doors. Separate cable entries shall be provided for the front and rear panels. However, interconnection between front and back panels shall be by means of inter-panel wiring at the top of the panels.

The 33 kV control and relay panel shall be of simplex type.

However, the Control/Relay panels intended to be used in the existing system shall be compatible with the existing panels for aesthetic and space requirement points of view.

- 2.2 Panels shall be completely metal enclosed and shall be dust, moisture and vermin proof. Panel enclosures shall provide a degree of protection not less than IP 43 as per IEC.
- 2.3 Panels shall be free standing, floor mounting type and shall comprise rigid welded structural frames enclosed completely with specially selected smooth finished, cold rolled sheet steel of thickness not less than 3mm for front and rear portions and 2mm for sides, top and bottom portions. There shall be sufficient reinforcement to provide level surfaces, resistance to vibration and rigidity during transportation and installation.
- 2.4 All doors, removable covers and panels shall be gasketed all around. Ventilation louvres, if provided, shall have screens and filters. The screens shall be made of either brass or GI wire mesh.
- 2.5 Design, materials selection and workmanship shall be such as to result in neat appearance inside and outside with no welds, rivets or bolt heads apparent from outside, with all exterior surfaces true and smooth.
- 2.6 Panels shall be suitable for floor mounting. Metal sills in the form of steel channels properly drilled shall be furnished along with anchor bolts and necessary hardware for mounting to a concrete floor. Any irregularity between the sills and flooring shall be sealed to prevent entry of dust, moisture and vermin.
- 2.7 Cable entries to the panels shall be from the bottom unless otherwise specified. The bottom plates of the panels shall be fitted with removable plates of adequate size for holding the cables using cable connectors to seal from dust and moisture. All cable connectors required shall be provided by the Contractor and shall be screwed type and shall be suitable for PVC armored cables.



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- 2.8 Control/Relay panels, if required to incorporate the provisions for SCADA as specified in the relevant chapter, shall be completely equipped and wired with necessary devices/equipment for control and other signals to be used for such systems. The detail requirements for SCADA systems have been furnished in the relevant chapters of these Specifications.

### 3 COMPONENT MOUNTING

- 3.1 All equipment on front/back of panel shall be mounted flush or semi-flush. In case of semi-flush mounting, only flange or bezel shall be visible from the front.
- 3.2 Equipment shall be mounted such that removal and replacement can be accomplished individually without interruption of service to adjacent equipment. Equipment mounted inside the panel shall be so located that terminals and adjacent devices are readily accessible without the use of special tools. Terminal markings shall be clearly visible.
- 3.3 Cutouts and wiring for free issue items, if any, shall be according to corresponding equipment-manufacturer's drawings. Cutouts, if any, provided for future mounting of equipment should include cover plates.
- 3.4 The centerline of switches, push buttons and indicating lamps shall be not at a height less than 750mm from the bottom of the panel. The centerline of relays with targets and/or requiring adjustment motors, test switches, and recorders shall be not less than 450mm from the bottom of the panel. No components shall extend below 200mm.
- 3.5 The centerline of switches, push buttons and indicating lamps shall be matched to give a neat and uniform appearance. Likewise, the top lines of all meters, relays and recorders, etc. shall be matched. Indicating lamps shall be of LED type.
- 3.6 No equipment shall be mounted on the doors without prior approval of the Employer.
- 3.7 The standard phase arrangement when facing the front of the switchboard shall be R-Y-B from left to right, from top to bottom and/or front to back. All relays, instruments, other devices, buses and equipment involving three-phase circuit shall be arranged and connected in accordance with the standard phase arrangement.

### 4 MIMIC DIAGRAMS

- 4.1 Mimic diagrams shall be provided on panels as required. Mimic diagrams shall be screwed on to panels and shall be made of anodized aluminum or plastic of approved fast color material, which can be easily cleaned. The width of the mimic bus shall be subject to approval of the Employer.
- 4.2 The colors for the various voltages in the mimic diagram shall be as follows:

System voltage

Mimic Color



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|        |              |
|--------|--------------|
| 132 kV | Signal Red   |
| 66 kV  | Light Orange |
| 33 kV  | Salmon pink  |
| 11 kV  | White        |

*If the existing mimic diagram differs from above color coding, the color and height shall match with the existing.*

- 4.3 When semaphore indicators are used for disconnecting switch positions, they shall be so mounted in the mimic that the disconnecting switches' 'close' position shall complete the continuity of the mimic. When control switches of discrepancy type are mounted in the mimic, the 'close' position of the switch shall complete the mimic.

## **5 ANNUNCIATORS**

- 5.1 Annunciators of the visual and audible type shall be provided on the panels. Annunciators shall be suitable for operation for the voltages specified.
- 5.2 Annunciators shall be of facia type translucent plastic window for each alarm point. Annunciator facia plates shall be engraved in block letter with respective alarm inscriptions, which will be furnished to Contractor by Employer. Alarm inscriptions shall be engraved on each window and the size of the lettering shall be not less than 5mm. The inscriptions shall be visible only when the respective light is lighted.
- 5.3 The annunciators shall be suitable for operation with normally open fault contacts which close on a fault. When specified in bill of materials, some of the annunciator points shall be suitable for operation with normally closed faults contacts which open on a fault. It shall be possible at site to change annunciators from "open to fault" to "close to fault" and vice versa. Annunciators shall be suitable for accepting fleeting faults of duration not less than 15 milliseconds.
- 5.4 Annunciators shall be compact self-contained units with associated relays and/or necessary cards mounted.
- 5.5 Annunciator facia units shall be suitable for flush/semi-flush mounting on panels. Replacement of individual facia inscription plates and lamps shall be possible from front of the panels.
- 5.6 One alarm buzzer common to annunciators on all the panels shall be provided. "Acknowledge", "Reset" and "Lamp Test" push buttons on all the panels shall be provided. These devices shall be located in the panels as determined by the Employer.
- 5.7 In case of static annunciator schemes, special precaution shall be taken by the Contractor to ensure that spurious alarm conditions do not appear due to false influence of external magnetic fields on the annunciator wiring and switching disturbances from the neighboring circuits.



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- 5.8 Each annunciation window shall be provided with two lamps to provide safety against lamp failure. Lamps shall operate in parallel such that failure of one will not affect operation of the other.
- 5.9 Sequence of Operation of the Annunciator shall be as follows :

| <u>Alarm Condition</u> | <u>Fault Contact</u> | <u>Audible Alarm</u> | <u>Visual Alarm</u> |
|------------------------|----------------------|----------------------|---------------------|
| Normal                 | Open                 | Off                  | Off                 |
| Abnormal               | Close                | On                   | Flashing            |
| Acknowledge            | Close or Open        | Off                  | Steady On           |
| Reset                  | Open                 | Off                  | Off                 |
| Lamp Test              | Open                 | Off                  | Steady On           |

In case 'RESET' push-button is pressed before abnormality is cleared, the lamps shall continue to glow-steady and shall go out only when 'Normal' condition is restored.

- 5.10 Provision of testing facilities for flasher and audible alarm circuits of annunciators shall be provided.

## 6. SPECIFIC PROTECTION REQUIREMENTS

In general, the major protection schemes to be employed are as follows:

### a. For transmission lines

- i) Main protection shall be with distance relay, which shall include:

- transfer trip facility for each independent pole through PLC/optical link
- Reclose facility with auto synchrocheck.

ii) Back-up protection shall be with directional IDMT overcurrent/earthfault (OC/EF) relays for parallel lines; and shall have additional definite time non-directional OC/EF for radial lines. Such directional OC/EF relays shall not be operated in case of potential loss. And, loss of potential shall lead to the alarm annunciator.

### b. For power transformers

- i) Main protection shall be with differential relay with inbuilt restricted earth fault.

- ii) As back-up protection:

- a. non-directional OC/EF shall be adopted at HV side.
- b. directional OC/EF relays shall be used on LV side

*If the existing scheme differs, the new scheme shall match the existing.*



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- c. For 132 kV bus-bar protection, current differential scheme with low impedance differential scheme shall be adopted. Where there are existing busbar scheme, additional equipments shall be provided to match the existing scheme.

- d. For 33 kV sub-transmission line protection

*Static/numeric* IDMT overcurrent / earthfault (OC/EF) relays with instantaneous feature shall be adopted.

- e. Other protective relays such as Circuit Breaker Failure, Trip Circuit Supervision, Synchro-Check etc shall be used as required.

The Contractor shall provide state-of-the art numeric type relays (BCU's and Protection Relays as required with necessary redundancy).(where specification does not call for specific type relay). The contractor shall furnish necessary probe and software, cable suitable for the relays supplied under this contract.

The auto reclose facility inbuilt in the relay shall provide delayed auto reclose and have a selector switch which can provide at least the following operating mode:

- i) single phase re-closing for single phase faults and three phase re-closing for multiphase faults (*to match Circuit Breaker specification*)
- ii) three phase re closing for single phase or multiphase earth faults
- iii) no re-closing (for single phase faults or multiphase faults)

The auto recluse scheme shall have at least two blocking inputs and have single phase delay adjustable at least to three seconds and a three phase delay adjustable at least to five seconds and have a reclaim time adjustable at least to 60 seconds.

## 6.1 Differential Relay

The differential relays shall be used for transformer, parallel feeder lines, and bus bar protection.

### a) Transformer Differential Protection:

The differential relays shall be three phases with six through-current restraint inputs. The relay shall have built-in trip relay, indicator and test switch. It shall have complete phase and earth-fault protection.



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The harmonic restrained operate time of the relay shall be approximately 30 ms at 3 times pick-up current. Similarly unrestrained operate time 10-20 ms at 2 times pick-up current with minimum impulse time of 3 minutes.

For transformer protection the relay shall have variable percentage restraint for external fault security, even at use of on-load tap charger.

The relay shall have second harmonic restraint from all three phases for inrush security and fifth harmonic restraint for all three phases for over excitation security. The sensitivity shall be 20 to 50 percent of rated current.

Unrestrained operation set-able to 20 times of rated current.

The relay shall be provided with separate interposing CT's for ratio and phase angle matching and equalizing of zero sequence current, or by other programming method.

Restricted Earth Fault protection shall be provided with the help of neutral CT on the HV or LV of the transformer.

**(b) Bus-bar differential scheme**

The 132 kV bus-bar shall be protected with low impedance differential relay. The numerical busbar protection shall have following features:

- fast operating time (<30 ms)
- stability against CT saturation
- suitable for 2 bus-bars sections and up to 20 feeders
- event and fault recorders

**6.2 Transmission Line Distance Protection (N/A)**

The directional distance relay shall be high speed numerical distance relay. The directional relays shall have following main features:

- Have three forward zones and one reverse zone.
- Have a maximum operating time of 50 milli secs for all types of faults within its Zone 1 reach.
- Have a maximum re-setting time of 50 milliseconds.
- Shall be capable to give single phase tripping and reclosing command
- Be able to operate with communication schemes : permissive or blocking or step acceleration
- Operate instantaneously when closing on the three phase Zero volt bolted fault.
- Capable to indicate distance to the faulty point
- Have inbuilt synchro check facility for auto recluse.
- Have self monitoring feature.
- Have event recording facility



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- Have fault recording facility.
- Have a VT supply supervision facility
- Have power swing blocking facilities

### 6.3 Over-current and Earth-fault Protection

These protection schemes shall be used as back-up protection of transmission lines and power transformers.

(a) Non-directional phase over-current protection shall:

- have an inverse characteristic with a definite minimum time of 3 seconds at 10 times setting.
- have a variable setting range of 20-200% of rated current
- have a high set instantaneous unit with a continuously variable setting range of 5-20 times of rated current.

(b) Non-directional earth fault protection shall:

- have an inverse characteristic with a definite minimum time of 3 sec. at 10 times setting.
- have an adjustable setting of 10-80% of rated current.
- have a high set instantaneous unit with a continuously variable setting range of 5-20 times of rated current.

### 6.4 Directional Over current Protection

This protection scheme shall be used as a back-up protection for power transformers low-voltage side, as back-up protection for parallel transmission lines and as main protection for parallel sub- transmission lines.

(a) Phase over current relay shall:

- have an inverse characteristic with a definite minimum time of 3 secs. at 10 times setting.
- have a variable setting range of 20-200% of rated current.
- have a characteristic angle of 45 degree.
- have a directional controlled low transient over-reach high set instantaneous unit of continuously variable setting range 5-20 times of rated current.
- be of voltage polarized directional controlled type.

(b) Directional earth-fault over-current protection

Earth fault over current relay shall:

- be of zero-sequence voltage polarized directional controlled.
- have an inverse characteristic with a definite minimum time of 3 secs. at 10 times setting.
- have an adjustable setting range of 10-80% of rated current.



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- have a directional controlled low transient over reach high set instantaneous unit with a continuously variable setting range of 5-20 times of rated current.
- have a characteristics angle of 45 degree.

#### 6.5 Local Breaker Back Up Protection (Circuit Breaker Failure Protection)

Provide a **two-phase and ground breaker failure relay**. This relay shall:

- be able to give a re-trip delayed order to the circuit breaker after initiation when one circuit breaker fails to open
- remedy to the breaker failure by tripping the adjacent breakers
- be able to operate even during adverse CT saturation conditions

#### 6.6 Synchro Check Relay

The synchro check relay shall be provided for each 132/66 kV transmission line. The static/numeric relay shall:

- measure difference in magnitude, phase angle and frequency between busbar and line voltage
- have a voltage check unit for closing order with a dead line and live busbar, or dead busbar and live line
- have an adjustable setting of at least :

5% to 30% of rated voltage for voltage magnitude difference

5° to 60° for phase angle difference

0.05 to 0.5 Hz for frequency difference

#### 6.7 Other Requirements

- (a) All auxiliary relays, if and when required for the completeness of the various protection schemes covered in this order, shall be deemed to be included in the scope of supply whether or not such items are specifically mentioned in the enclosed bill of material.
- (b) All terminal blocks for CT and PT circuits shall be of disconnecting line type. Suitable plastic covers for all terminal blocks shall be provided in order to prevent dust accumulation.
- (c) Panels shall be mounted to concrete foundation on galvanized steel channels with an intervening layer of anti-vibration strips made of shock absorbing materials, which shall be supplied by the Contractor.



- (d) Cable entries for all the panels shall be from bottom. The bottom plates of the panels shall be fitted with removable plates of adequate size for holding cables and sealing from dust and moisture.
- (e) A ground bus of bare copper strip of minimum size 25 x 6mm along the length of each panel shall be provided and shall be connected to the ground mat of the station.

## 7 ENERGY METERS

The Bidder shall quote separately for the energy meter, software and optical port and other necessary items for operational programming of the meters

Energy meters shall be numeric type manufactured by internationally reputed manufacturer. Each feeder shall be equipped with one set of kWh and kVARh meters suitable for import and export measurements as specified in Bill of Materials (Appendix). The meters shall preferably be four quadrant type. In case of numeric type energy meters, the contractor shall furnish probe, copy-writed software and other necessary items for operational programming of the meters.

All kWh and kVARh meters shall be of 0.2 class accuracy. In addition to all the tests required to be performed at the manufacturing plant, each of these meters shall be tested at the Employer's laboratory also at the expense of the Contractor prior to installation and commissioning and as and when required by the Employer during the warranty period. Any meter, which fails the tests, will not be acceptable and the Contractor shall supply their replacements immediately. If the replacements too fail the tests, then the Employer reserves the right to replace the meters with new one at the expense of the Contractor. The test results from the Employer's laboratory shall be final and binding upon both parties.

### SPECS of Energy meter:

*For Secondary CT-1 Amp & PT-110V, programmable at site. 3P4W, CL 0.2, Current rating 1-10Amp, Voltage range 0-480 V.*

## 8 MISCELLANEOUS ACCESSORIES

### 8.1 Space Heater

Each panel shall be equipped with space heaters to prevent moisture condensation within the enclosure and shall be completed with switch fuse units for power supply. Space heaters and switch fuse units shall be suitable for continuous operation.

### 8.2 Plug Point



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A 230 V, 1 phase, 50Hz AC plug point shall be provided in the interior of each cubicle with on-off switch for connection of hand lamps.

### 8.3 Panel Lighting

Panel lighting with door switch shall be provided in the interior of the cubicle.

### 8.4 DC Control supply:

Independent supply for main protection trip-circuit shall be provided and another separate supply shall be provided for back up protection, control and metering.

## 9 TESTS

9.1 Relay and Control Panels shall be subjected the following tests:

- (a) Mechanical operation test
- (b) Calibration test for meters
- (c) Characteristic test for relays
- (d) High voltage test of insulation (2000 volts for 1 minute)
- (e) Electrical control, interlock and sequential operation tests
- (g) Verification of wiring as per approved schematic diagram, etc.

9.2 Routine test certificates of all the relays supplied under this contract shall be submitted for the Employer's approval before dispatching the control and relay panel.

9.3 After completion of the installation, panels shall be subjected the following field tests:

- (a) Electrical control, interlock and sequential operation tests
- (b) Calibration test for meters
- (c) Measurement of insulation resistance
- (d) Characteristic test for relays, etc.

## 10 SPARE PARTS

The spare parts shall be provided in required quantities as listed in Price Schedule. Further spare parts as recommended by the manufacturer shall also be included in the Price Schedule.

Please note, if any of the spare parts are considered not required by the NEA, it can be deleted during Contract negotiation.





## APPENDIX 5.1

### **BILL OF MATERIAL**

The bill of materials shall cover only the major equipment, as will be required by the Tenderer for general information. The Tenderer shall offer his own design or type of equipment, which shall cover all the requirements of the Employer, for Employers' approval. It is to be understood that, all other associated auxiliary equipment and accessories, although not listed in the bill of materials, but necessary for the complete and sound functioning of the control and relay panels, as described in this specification, shall be furnished by the Contractor. Moreover, for the existing substations, the Bidder is required to investigate the existing CT ratios and propose the meters in compatibility with them accordingly.

#### **A. TRANSFORMER CONTROL PANEL**

| Item | Legend | Description   | Quantity per Panel |
|------|--------|---|--------------------|
| 1.   | ANN    | <p>Annunciator assembly, 24 active points, 110V DC, 4 rows high by 6 columns wide, flush mounted; with 3-separately mounted push buttons 2-separately mounted indicating lamps, one white lamp, and one red lamp.</p> <p>Following minimum annunciations shall be provided:</p> <ol style="list-style-type: none"> <li>1. Transformer differential protection operated</li> <li>2. Transformer H.V. backup protection operated</li> <li>3. Transformer L.V back up protection operated</li> <li>4. Transformer H.V CB failure trip</li> <li>5. Transformer Buchholz alarm</li> <li>6. Transformer Buchholz trip</li> <li>7. Transformer low oil</li> <li>8. Tap changer Buchholz trip</li> <li>9. Tap changer Buchholz alarm</li> <li>10. Tap changer low oil level</li> <li>11. Transformer winding and oil temperature high alarm</li> <li>12. Transformer winding and oil temperature extremely high trip</li> <li>13. Transformer cooling system fail</li> <li>14. Bus selections incomplete</li> <li>15. Pressure relief device operated</li> <li>16. Trip coil 1 &amp; 2 faulty</li> <li>17. SF6 gas pressure low alarm</li> <li>18. SF6 gas pressure low lockout</li> <li>19. AC FAIL</li> <li>20. DC Fail</li> </ol> <p>All the rest points are for spare</p> | 1 Lot              |
| 2    | Relay  | Only main relays and instruments are listed here. All the trip relays   |                    |



*[Handwritten Signature]*



|     |                                 |   |   |
|-----|---------------------------------|---|---|
|     | 87T<br>67/67N<br>51BF<br>51/51N | and auxiliary relays required for satisfactory operation of the scheme shall be included by the Contractor.<br>a. Differential protection for transformer with inbuilt REF (main)<br>b. LV backup protection<br>c. Breaker failure protection<br>d. H.V. backup protection of transformer<br>e. Trip circuit supervision relay<br>f. Interlock, switching & tripping relays<br>g. D.C. fail relay | 1 Lot<br>1 Lot<br>1 Lot<br>1 Lot<br>1 Lot<br>1 Lot<br>1 Lot |
|     |                                 | Interlocks, Switching & tripping Relay (where Required) for existing Bus Differential system. If possible mount in the existing Panel.  | 1 Lot   |
| 3.  | A                               | Indicating ammeter with selector switch<br>For specified CT ratios (For 1 Amp Secondary).   | 1 Lot   |
| 4.  | Energy meter                    | Kilowatt hour & KVARh with power import/export Facility and class 0.2, with impulse contact, for specified CT & PT Ratio (For Secondary CT-1 Amp & PT-110V) programmable at site. 3P4W, CL 0.2 Accuracy class, 1-10Amp, 0-480 V   | 1 Lot   |
| 5.  | MVA                             | Var meter<br>For specified CT & PT ratio (For Secondary CT-1 Amp & PT-110V)   | 1 Set   |
| 6.  | MW                              | 10(20) -0-10(20) MW<br>For specified CT & PT ratio (For Secondary CT-1 Amp & PT-110V)   | 1 Set   |
| 7.  | CS                              | Breaker control switch with 2-separately mounted indicating lamps for status indication   | 1 Lot   |
| 8.  | CS                              | Disconnecting control switch with 2-separately mounted indicating lamps for status indication   | 1 Lot   |
| 9.  |                                 | Electrically operated mimic disconnect device, 110V DC, to indicate the position of disconnecting switch  | 1 Lot   |
| 10. |                                 | Electrically operated mimic connected to position of line ground switch   | 1 Lot   |



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## APPENDIX 5.2

### 33 kV LINE CONTROL PANEL

| Item | Legend | Description   | Quantity per Panel |
|------|--------|---|--------------------|
| 1.   | ANN    | <p>Annunciator assembly, 18 active points, 110V DC, 3 rows high by 6 columns wide, flush mounted, and with:</p> <p>3-separately mounted push buttons</p> <p>2-separately mounted indicating lamps, one white lamp, and one red lamp.</p> <p>Following minimum annunciations shall be provided:</p> <ol style="list-style-type: none"> <li>1. Main protection trip</li> <li>2. Back up protection trip</li> <li>3. Trip circuit faulty</li> <li>4. V.T. Fuse fail</li> <li>5. Breaker failure protection trip</li> <li>6. Pole discrepancy</li> <li>7. C.B. in trouble</li> <li>8. Auto-reclose operated</li> <li>9. SF6 gas pressure low alarm</li> <li>10. SF6 gas pressure low lockout</li> <li>11. spare</li> <li>12. spare</li> <li>13. A.C. supply failure Alarm</li> <li>14. D.C. supply failure Alarm</li> <li>15. C.B trip</li> <li>16. spare</li> <li>17. spare</li> </ol> | 1                  |



*(Signature)*



|    |              |  |   |
|----|--------------|--|---|
|    |              | 18. spare  |   |
| 2. | Relay        | Only main relays and instruments are listed here. All the trip relays and auxiliary relays required for satisfactory operation of the scheme shall be included by the Contractor.  |   |
|    | 51/51N       | a. Over-current and earth fault protection   | 1 |
|    | 50BF         | b. Breaker failure protection  | 1 |
|    |              | c. Trip circuit supervision relay  | 1 |
| 3. | A            | Indicating ammeter with selector switch<br>for specified CT ratios (For 1 Amp Secondary).  | 1 |
| 4. | Energy meter | Kilowatt hour & KVARh with power import/export Facility and class 0.2, with impulse contact, for specified CT & PT Ratio (For Secondary CT-1 Amp & PT-110V) programmable at site. 3P4W, CL 0.2 Accuracy class, 1-10Amp , 0-480 V | 1 |
| 5. | MVAr         | Zero centre MVAr meter   | 1 |
| 6. | MW           | Center zero Megawattmeter, 10-0-10; 20-0-20 MW for specified CT & PT ratio(For Secondary CT-1 Amp & PT-110V)   | 1 |
| 7. | CS           | Breaker control switch, with 2-separately mounted indicating lamps for status indication.  | 1 |
| 8. |              | Electrically operated mimic disconnect device, 110V DC, to indicate the position of disconnecting switch   | 2 |
| 9. |              | Electrically operated mimic connected to position of line ground switch  | 1 |

**NOTE 1:** A separate terminal named “SCADA” shall be provided. All indications, alarm and control wiring shall be brought to this terminal for connection with SCADA equipment, when required.

**NOTE 2:** The Panel is to connected with the existing busbar & breaker failure protection system, therefore necessary relays & aux relay shall be included in the panel

**NOTE 3:** Please provide necessary AVR, and Control & Indication circuit for Remote Tap Changing and Control in the existing Panel. The scheme shall be suitable for parallel operation with the existing transformer.



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## SECTION I, PART 6

# DISCONNECTING SWITCH



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## SECTION I, PART 6

### DISCONNECTING SWITCH

#### 1 GENERAL

This specification covers the design, manufacture, assembly, shop test, supply, delivery, installation works, field test and commissioning of outdoor type disconnecting switches complete with all accessories for efficient and trouble-free operation as specified hereunder.

The equipment specified in this Section shall conform to the latest edition of the appropriate IEC specifications and/or other recognized international standards. In particular:

- IEC 60129 High-voltage alternating current disconnectors and earthing switches
- IEC 60529 Degree of protection provided by enclosures

#### 2 DESIGN REQUIREMENTS

- 2.1 The disconnecting switches shall be used for the 50Hz, 3 phase system.
- 2.2 The equipment shall be installed outdoor. All equipment, accessories and wiring shall be provided with sub-tropical finish to prevent fungus growth.
- 2.3 The maximum temperature rise in any part of the equipment at specified rating shall not exceed the permissible limits as stipulated in relevant standards.
- 2.4 The rated peak short circuit current or the rated short time current carried by the equipment shall not cause;
  - (a) mechanical damage to any part of the equipment
  - (b) separation of Contacts
  - (c) Insulation damage of "Current Carrying Part".
- 2.5 The disconnecting switches shall be (*center rotating for 36 kV, and for 66kV and above centre break*) with contact blades moving through *horizontal/vertical* plane.
- 2.6 The rating, the accessories to be furnished and the schedule of equipment are detailed in Appendix.
- 2.7 The disconnecting switches shall be able to carry the rated current continuously and rated short time current for one seconds without exceeding the temperature limit specified in the relevant standard.
- 2.8 The disconnecting switches shall be capable of withstanding the dynamic and thermal effects of maximum possible short circuit current.
- 2.9 In case of disconnecting switch with grounding switch, the grounding switch shall be capable of making to a dead short circuit without damage of the equipment or endangering operator. It shall be provided with and interlocking with the corresponding disconnecting switch.



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### 3 CONSTRUCTION FEATURES

- 3.1 The 3-pole disconnecting switches shall be gang-operated type so that all the poles make and break simultaneously.
- 3.2 The disconnecting switches shall be designed for *upright/vertical* mounting on steel structure. Disconnecting switches to be mounted on gantry structure shall include necessary steel channels, bolts, nuts, etc.
- 3.3 The disconnecting switches shall have padlocking arrangement in both "open" and "closed" positions.
- 3.4 All current carrying parts shall be of non-ferrous metal or alloy. All live parts shall be designed to avoid sharp points and edges.
- 3.5 All metal parts shall be of such material and treated in such a way as to avoid rust, corrosion and deterioration due to atmospheric conditions. Ferrous parts shall be hot-dip galvanized.
- 3.6 Bolts, nuts, pins, etc. shall be provided with appropriate locking arrangement such as lock nuts, spring washers, key, etc.
- 3.7 Bearing housing shall be weatherproof with provision for lubrication. The design, however, shall be such as not to require frequent lubrication.
- 3.8 All bearings in the current path shall be shorted by flexible copper conductor of adequate size (minimum – 150 mm<sup>2</sup>) to allow the specified fault current through it without injury.
- 3.9 Main contacts

The main contacts shall be of silver-plated copper alloy and controlled by powerful springs designed for floating and pressure point contact.

The contacts shall have sufficient area and pressure to withstand the electromagnetic stresses developed during short circuit without excessive heating liable to pitting or welding.

Contacts shall be adjustable to allow for wear, shall be easily replaceable and shall have minimum movable parts and adjustments.

The moving blade shall be made of electrolytic-copper / aluminum tube for centre rotating type disconnecting switch. Rotating feature of the blade at the end of tube travel for contact wiping shall be provided.

Arcing horns shall be provided to divert the arc from main contacts to the separating horns after the main contacts have opened. Arcing horns shall be renewable type.

#### 3.10 Insulators and Terminals

Insulators shall be post type, brown glazed and solid core single stage type.



The porcelain used for insulators shall be manufactured by wet process and shall be homogenous and free from cavities and other flaws.

Caps and pins shall be of the highest quality malleable iron or forged steel and smoothly galvanized.

Arcing horns as required shall be furnished.

All insulators of identical ratings shall be interchangeable.

The terminals of the disconnecting switch shall be provided with terminal connectors.

## 4 OPERATING MECHANISM

### 4.1 Disconnecting Switches

The operating mechanism for 66 kV and above, disconnecting switches shall be motor operated. *The driving motor of the motor operated disconnecting switch shall be suitable for operating on 400/230 V AC supply.* The mechanism shall also be equipped with dependable manual operating device for emergency operation when the power operating mechanism is inoperative.

The operating mechanism for 36 kV disconnecting switch shall be manual. The operating handle shall be such that it can be operated easily from standing height from ground level. Grounding of handle through copper flexible conductor of adequate size shall be provided.

The control shall be such that the disconnecting switch can be opened or closed from local as well as remote. LOCAL / REMOTE selector switch and OPEN / STOP / CLOSE push buttons shall be provided at the local "Mechanism Box" for local electrical operation. The LOCAL / REMOTE selector switch shall be lockable type.

Starters, relays and limit switches shall be provided as required for operation, indication and interlocks. All electrical controls shall be suitable for 110V DC.

The disconnecting switch shall be provided with a minimum number of eight (8) normally closed and eight (8) normally open electrically separated (Voltage free) auxiliary contacts for system interlock in addition to the auxiliary contacts required for its own indication and operational requirements so as to have a trouble free operation of the system. The contacts shall be convertible type so that normally open contact may be converted to normally closed contact and vice-versa at site.

All auxiliary contacts shall be wired up to terminal block in local mechanism box. All auxiliary contacts shall be silver plated and shall have positive wiping action when closing.

The auxiliary contacts shall be adjustable type to suit the following requirements.

- (a) Signaling of "closed position" shall not take place unless main power contacts have reached a position so that rated normal and short time current can be carried safely.
- (b) Signaling of "open position" shall not take place unless the main power contacts are at a safe isolating distance.





The operating device, auxiliary switches and all other devices shall be housed in a weatherproof box of sheet steel / aluminum alloy construction. The enclosure protection of the mechanism box shall be IP-55W as per IEC. The thickness of the sheet steel shall be at least 2mm. In the case of aluminum alloy, the operating box shall be of robust design. The box shall have gasket-hinged door with lock and key. The box shall be suitable for fixing on disconnecting switch steel structure. A 4mm thick removable gland plate shall be provided at the bottom of the box for cable entry. The box shall be mounted at a safe working clearance from the live parts of switches. Thermostat-controlled space heater with ON-OFF switches rated 230V, 1 phase, 50Hz shall be provided to prevent condensation within the mechanism box.

## 4.2 Grounding Switches

The grounding switch shall be triple pole manually and gang operated. The mechanism shall be such that one operator alone shall be able to operate without undue effort. Electrical and mechanical interlocking shall be provided for the safe operation of grounding switch.

The grounding switch shall be capable of withstanding the electrical and mechanical stresses developed by a short circuit current specified in Appendix. The cross-section of the flexible copper connection between rotating shaft and structure shall be capable to allow specified fault through it without injury but of minimum size 150 mm<sup>2</sup>.

Arrangement shall be provided to padlock the grounding switch in open and closed positions.

The operating handle shall be such that it can be operated easily from standing height from ground level. Grounding of handle through copper flexible conductor of adequate size shall be provided.

Each grounding switch shall be provided with four (4) normally closed and four (4) normally open contacts for remote indication and interlocking purpose.

All the auxiliary contacts and interlocking coils shall be housed in a mechanism box. The box shall be suitable for fixing on grounding switch steel structure. A 4mm thick removable gland plate shall be provided at the bottom of the box for cable entry.

Auxiliary contacts shall be suitable for 0.5A, 110V DC inductive breaking duty.

The auxiliary coils shall be suitable for 110V DC supply.

## 5 TESTS

### (a) Routine Tests

On completion each disconnecting switch shall be subjected to following routine tests. As far as practical, the procedure of IEC shall be followed:

- Power frequency voltage dry test
- Measurement of resistance of main circuit
- Control and secondary wiring check tests
- Mechanical operation test



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(b) Design Tests

The disconnecting switch design tests shall include following:

- Dielectric tests, including impulse withstand tests
- Radio interference tests
- Temperature rise tests
- Short-time withstand current tests
- Operating and mechanism endurance test
- Voltage drop test.

The voltage drop across one complete phase of a switch shall be measured when carrying rated current.

The Bidder shall submit copy of design test report from recognized testing laboratory for the disconnecting switch of the offered model along with the bid.

(c) Field Tests

After installation at Site, the disconnecting switches shall be subjected to the following field tests:

- (a) Construction inspection
- (b) Measurement of insulation resistance of main and auxiliary circuits
- (c) Mechanical operation test

**6 DRAWINGS, DATA AND MANUALS**

6.1 The General arrangement drawing with Technical leaflets shall be furnished with the Bid.

6.2 After award of Contract the successful Bidder shall submit the required number of copies of the following drawings and data for approval of the Employer.

- (a) Outline dimensional drawings of the equipment showing general arrangement and location of fittings.
- (b) Transport / shipping dimensions with weights.
- (c) Foundation and anchor bolt details including loading condition.
- (d) Assembly drawings for erection at site with part numbers and schedule of materials.
- (e) Electrical schematic and wiring diagram.
- (f) Any other relevant drawings and data necessary for erection, operation and maintenance.
- (g) Instruction manual and data sheets.



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- (h) Any other relevant data, drawing and information necessary for review of the items stated above.

## 7 SPARE PARTS

For each type of disconnecting switch, the spare parts shall be provided in required quantities as listed in Price Schedule. Further spare parts as recommended by the manufacturer shall also be included in the Price Schedule.

Please note, if any of the spare parts are considered not required by the NEA, it can be deleted during Contract negotiation.



## APPENDIX 6.1

### TECHNICAL PARTICULARS OF 132kV DISCONNECTING SWITCH WITH & WITHOUT GROUNDING SWITCH

| S. No | Description   | Disconnecting switch 132 kV                                 |
|-------|---|---|
| 1.    | Type  | 3-poles, center break                                       |
| 2.    | Rated Voltage                                       | 145 kV  |
| 3.    | Frequency   | 50 Hz   |
| 4.    | Insulation levels                                   |   |
|       | a) Basic impulse level (BIL)                        | 650 kV (crest)  |
|       | b) Power frequency withstand voltage (For 1 minute) | 275 kV  |
| 5.    | Current ratings                                     |   |
|       | a) Continuous current                               | 1250A   |
|       | b) Rated Short Time current (1 sec.)                | 25 kA   |
| 6.    | Operating mechanism of disconnecting switch         | Motor operated (both local and remote operation) and manual |
| 7.    | Auxiliary power supply                              |   |
|       | a) Space heater and cubicle                         | 230V, 1-phase, 50Hz   |
|       | b) Control circuit                                  | 110 V DC  |
|       | c) Operating motor                                  | 230/400 V, 50 Hz  |
| 8.    | Grounding Switch                                    | Not applicable  |
| 9.    | Applicable standard                                 | IEC   |

## APPENDIX 6.2

### TECHNICAL PARTICULARS OF 33kV DISCONNECTING SWITCH WITH & WITHOUT GROUNDING SWITCH

| S. No | Description   | Disconnecting switch 33 kV                                  |
|-------|---|---|
| 1.    | Type  | 3-poles, center break                                       |
| 2.    | Rated Voltage                                       | 33 kV   |
| 3.    | Frequency   | 50 Hz   |
| 4.    | Insulation levels                                   |   |
|       | a) Basic impulse level (BIL)                        |   |
|       | b) Power frequency withstand voltage (For 1 minute) | 325 kV  |
| 5.    | Current ratings                                     |   |
|       | a) Continuous current                               | 2000A   |
|       | b) Rated Short Time current (1 sec.)                | 25 kA   |
| 6.    | Operating mechanism of disconnecting switch         | Motor operated (both local and remote operation) and manual |
| 7.    | Auxiliary power supply                              |   |
|       | a) Space heater and cubicle                         | 230V, 1-phase, 50Hz   |
|       | b) Control circuit                                  | 110 V DC  |
|       | c) Operating motor                                  | 230/400 V, 50 Hz  |
| 8.    | Grounding Switch                                    | Not applicable  |
| 9.    | Applicable standard                                 | IEC   |



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## **SECTION I, PART 7**

### **SPECIFICATION OF LIGHTNING ARRESTOR**



## SECTION I, PART 7

### LIGHTNING ARRESTER

#### 1 GENERAL

This specification covers the design, manufacture, factory test, delivery, installation, field test and commissioning of lightning arresters, complete with all accessories.

The equipment specified in this Section shall conform to the latest edition of the appropriate IEC specifications and/or other recognized international standards. In particular:

- IEC 60099-4 Metal-oxide Surge arrester without gap for a.c. system
- IEC 60099-5 Surge arrester - Selection and application recommendations
- IEC 60529 Degree of protection provided by enclosures

#### 2 DESIGN REQUIREMENTS

- 2.1 The lightning arresters shall be suitable for a nominal system of 3 phase, 50Hz solidly grounded system. Lightning arresters shall be provided at entry points of the overhead transmission lines and both HV & LV sides of the transformers.
- 2.2 The lightning arresters shall be station type / transformer-tank-mounted, gap less metal oxide type of rated voltage of 120 kV for 132 kV system, 60 kV for 66 kV system, 30 kV for 33 kV system & 9 kV for 11 kV system. The nominal discharge current shall not be less than 10 kA.
- 2.3 The active part of the lightning arresters shall be accommodated in single stacked porcelain insulators, which are suitably reinforced to prevent explosion of an arrester.
- 2.4 Pressure relief device shall be provided for the safe discharge of internal pressure.
- 2.5 The lightning arresters shall be preferably mounted on galvanized steel structure. Terminal connectors for both line and ground terminals shall be furnished.
- 2.6 Surge monitoring device consisting of surge counter, leakage current measuring instrument etc., along with insulating bases for mounting at the bottom of the arrester, shall be furnished.
- 2.7 The technical features of the lightning arresters are given in Appendix.

#### 3 TEST

- 3.1 Each lightning arrester switch shall be subjected to following routine tests. As far as practical, the procedure of IEC shall be followed:
  - (a) Measurement of reference voltage
  - (b) Residual voltage test



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- (c) Internal partial discharge test.

3.2 The lightning arrester design tests shall include following:

- (a) Insulation withstand test
- (b) Residual voltage test
- (c) Long duration current impulse test
- (d) Operating duty cycle test
- (e) Artificial pollution test

The Bidder shall submit copy of design test report from recognized testing laboratory for the disconnecting switch of the offered model along with the bid.

#### **4 DRAWINGS AND DATA**

4.1 The following documents shall be furnished along with the bid:

- (a) Standard catalogue identifying the models and ratings being furnished
- (b) Outline drawings including dimensions

4.2 The following drawings and data shall be furnished in required number of copies after award of Contract for approval of Employer:

- (a) Outline drawings including dimensions
- (b) Foundation and anchor details including dead load
- (c) Transport/shipping dimensions with weight
- (e) Any other relevant data, drawings and information

#### **5 NAMEPLATE**

Each lightning arrester shall be provided with a nameplate of weather resistant material fitted in a visible position showing the following items as a minimum:

- (a) Manufacturer's name
- (b) Manufacturer's serial number and type designation
- (c) Year of manufacture
- (d) Rated voltage
- (e) Nominal discharge current



### **APPENDIX 7.1**

#### ***TECHNICAL PARTICULARS OF 120kV LIGHTNING ARRESTERS***

| S.N. | DESCRIPTION   | 120kV LA                         |
|------|---|----------------------------------|
| 1.   | Manufacturer and Country of origin                                |                                  |
| 2.   | Years of manufacturing service                                    | 10                               |
| 3.   | Manufacturer's designation as per submitted catalogue / Model No. | To be furnished                  |
| 4.   | Applicable standard   | IEC                              |
| 5.   | Type  | Gap less metal – oxide / Outdoor |
| 6.   | Rated voltage rating of L.A.                                      | 120                              |
| 7.   | Impulse withstand voltage, (crest)                                | 650                              |
| 8.   | Power frequency withstand voltage                                 | 275                              |
| 9.   | Rated frequency   | 50                               |
| 10.  | Nominal discharge current   | 10                               |
| 11.  | Surge counter with insulating base furnished?                     | Yes                              |
| 12.  | Leakage current measuring instrument furnished?                   | Yes                              |
| 13.  | Porcelain creepage distance                                       | 3300                             |
| 14.  | Line terminal with accessories provided                           | Yes                              |
| 15.  | Earth terminal with accessories provided                          | Yes                              |
| 16.  | Has manufacturer exported such units?                             | Yes                              |

### **APPENDIX 7.2**

#### ***TECHNICAL PARTICULARS OF 30kV LIGHTNING ARRESTERS***

| S. No. | Description   | 30 kV LA                        |
|--------|---|---------------------------------|
| 1.     | Type  | Gap less, Metal –oxide, Outdoor |
| 2.     | Mounting  | Pedestal and Tank mounted       |
| 3.     | Rated frequency   | 50Hz                            |
| 4.     | System Voltage  | 33 kV                           |
| 5.     | Rated Highest Voltage                                     | 36 kV                           |
| 6.     | Impulse withstand Voltage (BIL)                           | 170 kV (crest)                  |
| 7.     | Power frequency withstand Voltage                         | 70 kV                           |
| 8.     | Nominal discharge current of 8/20 micro second wave shape | 10 kA                           |
| 9.     | Applicable Standard                                       | IEC 60099-4                     |



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### **APPENDIX 7.3**

#### ***TECHNICAL PARTICULARS OF 9kV LIGHTNING ARRESTERS***

| <b>S. No.</b> | <b>Description</b>  | <b>9 kV LA</b>                  |
|---------------|---|---------------------------------|
| 1.            | Type  | Gap less, Metal –oxide, Outdoor |
| 2.            | Mounting  | Tank mounted                    |
| 3.            | Rated frequency   | 50Hz                            |
| 4.            | System Voltage  | 11 kV                           |
| 5.            | Rated Voltage   | 12 kV                           |
| 6.            | Impulse withstand voltage (BIL)                           | 75 kV (peak)                    |
| 7.            | Power frequency withstand voltage                         | 28 kV (rms)                     |
| 8.            | Nominal discharge current of 8/20 micro second wave shape | 10 kA                           |
| 9.            | Applicable Standard                                       | IEC 60099-4                     |



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## SECTION-I, PART-8



## SPECIFICATION OF 12KV SWITCHGEAR PANEL



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## SECTION I, PART-8

### 12kV SWITCHGEAR

#### 1.1 GENERAL

This specification covers the Design, Manufacture, Assembly, Shop test, Supply, Delivery, Installation works and Field test of 11kV Indoor VCB Switchgear Panels complete with all accessories for efficient and trouble free operation as specified herein under.

#### 1.2 EQUIPMENT TO BE FURNISHED

The following equipment shall be supplied:

- a. For Pokhara Substation: 11 kV Indoor Switchgears with Triple Pole Operating, spring Charging Mechanism with motor for 11kV including spares.
  - 2500A, Incomer VCB - 2 Sets
  - 1250A, Outgoing VCB - 4 Sets
- b. For Chapur Substation: 11 kV Indoor Switchgears with Triple Pole Operating, spring Charging Mechanism with motor for 11kV including spares.
  - 2000A, Incomer VCB - 2 Sets
  - 1250A, Outgoing VCB - 4 Sets
  - 2000A Buscoupler VCB - 1 Set
- c. For Kawasoti Substation: 11 kV Indoor Switchgears with Triple Pole Operating, spring Charging Mechanism with motor for 11kV including spares.
  - 2000A, Incomer VCB - 1 Sets
  - 1250A, Outgoing VCB - 2 Sets
  - 2000A Buscoupler VCB - 1 Set
- d. For Kamane Substation: 11 kV Indoor Switchgears with Triple Pole Operating, spring Charging Mechanism with motor for 11kV including spares.
  - 2000A, Incomer VCB - 1 Sets
  - 1250A, Outgoing VCB - 6 Sets
  - 2000A Buscoupler VCB - 1 Set
- e. All accessories and auxiliary equipment required for the successful operation.
- f. Special tools and tackle required for operation and maintenance of equipment as specified.

**Adaption works for existing SAS:** The bidder shall provide all necessary compatible equipments and instrumentation including but not limited to BCU's, Switches Relays and other instrumentation as required for the full Integration with the existing SAS system in above mentioned substations



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All necessary signals from the new panels shall be integrated with existing SAS software. The signal list shall be provided during detail engineering. The system used in the existing panel shall be restored completely for the successful completion of the work in above mention substations.

**Following equipment shall be supplied only from the manufacturers specified hereunder:**

- i. VCB shall be from ABB, AREVA, CGL, Hitachi, Siemens, Mitsubishi, LG, Fuji, GE or Schnieder Electric.
- ii. The main protection relays shall be form ABB, AREVA, CGL, SIEMENS, Fuji, Reyrolle / Eusun Reyrolle, Toshiba, Mitsubishi, Schnieder Electric, GE or Hitachi.
- iii. Energy Meters: ELSTER (ABB), ACTARIS (Schlumberger), EDM I or SIEMENS or equivalent.

### 1.3 DESIGN REQUIREMENTS

The circuit breakers shall be suitable for 3 phases, 50 Hz.

Circuit breakers shall be installed Indoor for switching Transformer and Line.

All equipment and accessories shall be provided with sub-tropical finish to prevent fungus growth.

The maximum temperature rise in any part of the equipment at specified rating shall not exceed the permissible limits as stipulated in relevant standards. The de-rating of the equipment shall be made taking 50 degree C as an ambient temperature of the site, if it is designed for any lower ambient temperature.

The rated peak short circuit current or the rated short time current carried by the equipment shall not cause;

- a. Mechanical damage to any part of the equipment
- b. Separation of contacts.
- c. Insulation damage of "Current Carrying Part"

Technical particulars of the circuit breaker shall be as per **specified**.

*All auxiliary equipment shall be suitable for 3 phase-4 wire, 50 Hz, 400V AC or 1Phase, 230V AC*

*All controls shall be suitable for 110V DC.*

The VCB should be Indoor type with minimal maintenance, high reliability and completely free from menace of vermin. It should be designed with adequate clearances; sufficient creepage to suit polluted atmosphere and the communication between the inside of pole unit and the atmosphere is not desirable. Each breaker should have three porcelain enclosed vacuum type interrupters, which is required to provide a high insulation and an excellent breaking capability.

### 1.4 DESIGN REQUIREMENTS



11 kV, Indoor Metal Clad VCB Switchgear with Triple Pole operating, spring charging Mechanism with motor for 11kV, Incomer and Outgoing feeders.

#### **1.4.1 General Requirement**

11kV cubicle type Indoor Switchgear Panel shall be an air insulated metal clad switchgear with withdraw able vacuum circuit breaker with the fault interrupting capacity of 25 kA at 11kV solidly grounded system. The switchgear shall be arranged in connection with the existing 11kV Bus Bar System. The cubicle shall be of modular design provided with space heaters, with the following modules integrated neatly to form dead front type switchgear capable of extension on the both side, forming a single row, single bus bar switchgear panels.

- Breaker compartment.
- Busbar Compartment
- Cable, C.T. Compartment
- Instrument and Relay Compartment (LV Compartment)
- 11kV P.T. Compartment (For Incomer).

- 1.1 All Switchgear operation shall be performed behind a close door. Additionally it shall even be possible to perform all preparations for work inside the cubicle with full degree of protection.
- 1.2 The use of insulation material shall be reduced to minimum; only ripped insulators with high-anti-tracking characteristics shall be used for necessary conductor supports.
- 1.3 Cubicle front shall be covered by a door with inspection windows for mechanical indication for CB ON/OFF position, spring charged and counter indication of CB operation.
- 1.4 The cubicle shall be of modular design consisting of separate modules for busbar, circuit breaker, cable and low voltage compartment, and instrument component. Each compartment shall have its own pressure relief flap. High voltage cable termination compartment shall have a steel wire grid mesh fitted inside the back cover so as to prevent accidental contact with the live parts during the routine inspection of the panels. The fixed contact shall be mounted in bushing moved by circuit breaker carriage.
- 1.5 Earthing to cable feeder and Busbar shall be done via earthing switch manually operated from panel front.
- 1.6 Fixed contacts shall have flat silver plating and contact pressure of male and female contacts during connected position according to the International Standard.
- 1.7 Busbars and Jumpers shall have made of flat electrolytic bare copper contact with special heat shrinkable sleeves which provide effective insulation between phases or phase to earth, even if bridged by vermin or other conducting body and suitable for rated [current as per the Appendix](#). Busbar shall be latched per panel and easy to replace by standard normal material. Flexible insulation shrouds shall cover the Busbar to Jumper Joints and jumper to stationary contact joints.



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- 1.8 Bottom of the cubicle shall be covered with a bottom mica plate through which cables are passed into the panel.
- 1.9 The proposed switchgear panel shall be extendible on both sides.
- 1.10 The proposed switchgear panel shall be suitable for mounting of standard Current and Voltage Transformer according to IEC standard.
- 1.11 The circuit breaker cubicle shall be designed as to be vermin proof to prevent the entry of the vermin, reptiles, mouse etc. inside the compartments of the cubicles

#### **1.5. WITHDRAWABLE PART (CARRIAGE)**

- 1.1 The chassis shall be made of sheet-steel section and shall carry the switching device, moving mechanism, 4 rolling contact bearings for movement and interlocking mechanism. Movement for carriage shall be done manually and shall be independent from switch room floor.
- 1.2 Moving contacts shall be double flat contact with silver plated contact pieces. The flexible fixing shall allow high tolerance and avoiding overheating.
- 1.3 Connection of auxiliary supply to the fixed part shall be verified via multi-pole plug, which shall be included in the interlocking system. For the easy and assured insert of the plug the hose should come from the fixed part and the plug shall be on with-draw able part.
- 1.4 CB and Isolating Switch Carriage shall have the provision to operate mechanically behind the closed door in Operating and Test Position.
- 1.5 Carriage of the same rating shall be exchangeable. It shall be possible to insert CB with higher current in lower rated cubicle but not vice versa.

#### Other Requirements for removable parts:

Removable parts are intended to be used as a disconnecter or intended to be removed and replaced more often than only for maintenance purposes, mechanical operation tests shall also be possible as per IEC 62271-102.

The requirement that it shall be possible to know the operating position of the disconnecter or earthing switch by applying following conditions:

- The isolating distance is visible.
- The position of the withdrawable part, in relation to the fixed part, is clearly visible and the positions corresponding to full connection and full isolation are clearly identified.
- The position of the withdrawable part is indicated by a reliable indicating device.

Any removable part shall be so attached to the fixed part that its contacts will not open inadvertently due to forces which may occur in service, in particular those due to a short circuit.



## **1.6 11 KV METALCLAD SWITHGEAR:**

### **1.1 Main Equipment Characteristics**

#### **1.1.1 Insulation:**

- i 11kV primary equipment shall be insulated to meet or exceed the following criteria:
  - Rated Lightning Impulse Withstand Voltage (kVp): 75
  - Rated Power Frequency Withstand Voltage (kVrms): 28
- ii 11kV cubicles shall be designed to provide phase segregation within the enclosures.

#### **1.1.2 Clearances:**

- i 11kV Primary Equipment clearances between phases and phase to earth shall not be less than as per IEC, whichever is greater.
- ii The layout of the equipment shall provide for safe access for operation and maintenance whilst the remaining sections equipment are alive.
- iii Minimum clearances in air for the 11kV 'Indoor' Primary Equipment shall not be less than as per IEC:
- iv The busbars shall be insulated by High Grade Phase Insulation. Busbars partitioning shall be done by means of a bushing plate with Cast-Resin Insulators and Cubicles shall be partitioning with earthed sheet metal barriers.
- v When it is not practicable to disconnect the cable for the dielectric tests from the metal-enclosed switchgear and control gear, those parts which remain connected to the cable shall be capable of withstanding the cable test voltages as stated by the relevant cable standard.
- vi The dimension (specially height) of one termination point of the Trunking Chamber should be matching with the Bus Bar Height of the existing VCB and the height of other termination point of Trunking Chamber should be matching with Bus Bar height of New VCB.

#### **1.1.3 Current Carrying Capacity:**

- i Switchgear 11kV Busbars and Connections thereto shall be designed to carry current corresponding to Maximum Permissible Overload of the connected equipment without exceeding temperature rise specified in the Relevant Standards.
- ii Switchgear 11kV Busbar shall be designed to safely withstand with an appropriate margin of the Mechanical and Thermal Effects corresponding to the following short circuit currents:  
Symmetrical three-phase
  - (Is) (kA)rms: 25
  - Peak making Current (kA)p : 62.5

## **1.7 Vacuum Circuit Breakers:**



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### 1.7.1 General

The 11 kV Circuit Breakers shall be Vacuum type, easily withdraw-able and housed in a cubicle. It shall consist of three Vacuum Interrupter, three Supports and the Operating Mechanism. The Operating Mechanism shall have either Motor Charged Spring Operated or Solenoid Operated, with provision of hand operated mechanism. With the breaker in close state, spring energy shall be for a "Trip/Close/Trip" Cycle.

### 1.7.2 Main Data:

Type: Metal enclosed Indoor switchgear cubicle type with vacuum interrupters.

- Nominal Service Voltage (kV) : 11
- Rated Voltage (kV) : 12
- Rated Frequency (Hz) : 50
- Rated Nominal Current for Incomer : 2500A
- Rated Nominal Current for Buscoupler : 2000A
- Rated Nominal Current for Outgoing feeder : 1250A
- Rated Short-Time Breaking Current (asymmetrical) at Rated Voltage, : 25 KA (rms)
- Rated Short-Time Making Current at Rated Voltage (KA)p : 62.5 (KA)p
- Rated Operating Mechanism: Motor-spring operated or solenoid operated. : Suitable for Trip/close /Trip cycle.
- Provision for Manual Operation also.

### 1.7.3 Technical Requirements:

- i The Circuit Breakers shall meet requirements of IEC 56 & IEC 62271.
- ii **Vacuum Interrupter:** The Arcing chamber with the two stem connected contacts shall be located between two ceramic insulators. One contact shall be fixed to the housing and the moving contact shall be connected to the housing via vacuum tight bellows. The metal bellows shall enable the moving contact to carry out its strokes. The metal bellows must be able to withstand the movement corresponding to 10,000 make/break operations without failing. The insulators shall be made of metallized aluminium oxide ceramic, which permits them to be brazed to metal so that there is no need to use conventional seals. The Vacuum Interrupter shall remain vacuum tight through out its working life.  
  
The Contact surfaces should be free of impurities and pollution layers. Materials of high conductivity should be used such that the contact resistance will be very low.
- iv The Operating Mechanism shall have single Trip Coil and be electrically Trip-Free and Anti-pumping.
- v The Spring Charging Motor, the Closing Coil, the Tripping Coils and all other control devices of all circuit Breakers shall be suitable for 110V DC Operation.



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- vi A Manually Operated Mechanism for closing and tripping shall be provided in the breaker cubicle for Maintenance and Emergency Operation. This device shall be so interlocked that while it is operative, the breaker cannot be operated remotely.
- vii Each Circuit Breakers shall be equipped with an Operation Counter (to register tripping operations) and position indicator, on the cubicle front.
- viii Provision shall be made for Remote alarm/indication of the following status through a pair of NC+NO contacts:
  - Circuit Breaker "Open".
  - Circuit Breaker "Closed".
  - Circuit Breaker "Trip".
  - Trip Circuit Healthy.
  - Circuit Breaker "Failure"
- ix The circuit breaker shall be equipped with a local control switch and local remote selector switch auxiliary contacts for remote indication. All contacts shall be wired to terminal block in the breaker cubicle. Control cable and the indicator box shall have at least three numbers of spare cables and the indicators for future use. CT terminal shall be disconnecting type.
- x Each of the circuit breakers shall be housed in a freestanding indoor type cubicle. This cubicle (and others comprised in the 11KV metal clad switchgear) shall be of standard construction and shall be suitable for attachment of cable connection as described in relevant cubicles.
- xi Plugging contact apertures shall be fitted with fully automatic metal safety shutters to close the apertures and prevent access to live part when truck partition is withdrawn and to open when the truck partition is being plugged in. The shutters shall form reasonable dust, drip, fire and insect proof enclosures over the apertures.
- xii Auxiliary Switches shall be provided as required for Indication, Control, Protection and Interlocking. In addition, a minimum of two Normally Open and two Normally Closed Auxiliary Contacts shall be provided as spare contacts. All available contacts of Auxiliary Switch Assembly shall be wired to the Terminal Blocks on the fixed portion of the equipment of the switches and terminals shall be such as to facilitate future extension.
- xiii All auxiliary switches shall have contacts with strong wiping action. The switches shall be located in an accessible position and adequate physical protection shall be provided.
- xiv The Circuit Breakers shall be tested in accordance with IEC56 and IEC60 and shall include the following routine tests:
  - \* Mechanical operating tests
  - \* Power Frequency Voltage withstand tests.
  - \* Tests on auxiliary and control circuits
- xv The quality assurance of the equipments and their auxiliary shall be of ISO 9001 Standard. An updated copy of its certificate shall be submitted.



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- xvi The Minimum Operating Cycle (without maintenance) of Interrupters and Operating Mechanisms shall be suitable for operation over 10Years or 10,000 operations with rated current or 100 operation with rated short circuit current and overall life shall be more than 30,000 operating cycles for bellows.
- xvii The Vacuum Circuit Breaker installed in the Switchgear shall move into following position in the Circuit Breaker Components:
- ⇒ Running Position (Run)  
Main Circuit and Control Circuit connected to all circuits.
  - ⇒ Test Position (Test)  
Main circuit separated from the circuit and only Control Circuits are Connected.
  - ⇒ Disconnected Position

As a Control Circuit Connector that would be plugged by hand during the test position both Main and Control circuit are disconnected from the Circuit.

### **EARTHING**

- i To ensure personnel protection during maintenance work, all parts of the main circuit to which access is required or provided shall be capable of being earthed prior becoming accessible.
- ii Factory built transport units shall be interconnected during final installation through an earthing conductor. This interconnection between the adjacent transport units shall be capable of carrying the rated short time and peak withstand current for the earthing circuit.
- iii. These cubicles shall be equipped with copper earthing bus bars of not less than 200Sq.mm.
- iv The enclosure of each functional unit shall be connected to this earthing conductor. All the metallic parts intended to be earthed and not belonging to a main or auxiliary circuit shall also be connected to the earthing conductor directly or through metallic structural parts.

### **1.7.4. EARTHING SWITCHES**

- 1.7.4.1 The 11KV metal clad switchgear shall include earthing switches to facilitate earthing of each cubicle as specified.

The Earthing Switch is operated by means of detachable lever from outside the cable compartment. It shall be mechanically interlocked with the CB so that the earthing switch in close position in section of CB truck into the service position is not possible. The operation of the Earthing Switch shall not be possible as long as the CB is not in isolated position.

#### **1.7.4.2 Main Data**

Rated Voltage KV

: 12 kV



|  |               |
|--|---------------|
| Rated Short-Time Breaking Current (asymmetrical) at Rated Voltage, | : 25 kA (rms) |
| Rated Short-Time Making Current at Rated Voltage (KA)p             | : 62.5 (kA)p  |

#### 1.7.4.3 Technical Requirements:

- i. The Earthing Switches shall meet the requirements of IEC129.
- ii. Auxiliary Switches shall be provided as specified for the Circuit Breakers.
- iii. Provision shall be made for padlocking in the Open and Closed position.
- iv. Manual control of the switches and Position indicator external to the cubicle shall be provided.
- v. The Earthing Switch shall be interlocked manually with circuit breaker.

#### 1.7.5 INTERLOCKING

The following operation shall be taken place only when the under stated interlocking conditions are fulfilled to ensure Personnel and Operational Safety.

##### 1.2.5.1 Transferring the withdrawable part from the Disconnecting Position to the Service Position:

- Control Circuit Plug Inserted
- High Voltage Compartment Door closed.
- Circuit Breaker in OPEN Position.
- iv Earthing Switch in OPEN Position

##### 1.7.5.2 Transferring the Withdrawable part from the Service Position to the Disconnected Position.

Circuit Breaker in OPEN Position.

##### 1.7.5.3 Operating the Circuit breaker

- i Withdrawal part in the Interlocked Final Position (Service or Disconnecting position)

##### 1.7.5.4 Operating the Earth Switch

- i. Withdrawal part in the interlocked disconnected position. Windows shall be provided to allow visual inspection.

The Switches shall be tested in accordance with IEC129 and IEC265 and shall include the following routine tests:

- Operating and Mechanical tests
- Measurements of the resistance of the main circuit.

#### 1.8 LOW VOLTAGE COMPARTMENT:

The Low Voltage Compartment of the Switchgear shall be located on the front and on the top front of the Panel and shall be accessible with a separate door and partitioned against high voltage part. Connection of control and Metering cable is by means of a Multi pole plug to the withdrawable part possibly at front face of the breaker. Low voltage devices metering and protection equipment shall be mounted flush in the door or on the mounting plate inside.



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Wiring inside the cubicle shall be done by 2.5 Sq. mm insulated stranded copper wires for current circuits and 2.5 Sq. mm for voltage circuits. All power circuit shall be wired with 4 Sq.mm cables.

**The following equipments shall be mounted in the low voltage compartment.**

- 1 No Ammeter Digital Type of 0.5 class with A/S Switch.
- 1 No. Voltmeter, Digital Type of 0.5 class, with Voltage Selector switch for Incomer.
- 1 No. MW / MVA Meter, Digital type of 0.5 class
- For Incomer and outgoing feeders - 1 No Energy meter 3Phase 4 wire, Digital, programmable via Optical Port, 3P4W, class 0.5 designation, Current rating 1-10Amp, Voltage range 0-480 V. The energy meter should have test pulse and calibrating facility. The Energy meters should be from the list of manufacturer.
- **Directional Over current and Earth fault Protection for Incomer**

This protection scheme shall be used as a back-up protection for power transformers low-voltage side and as main protection for parallel sub- transmission lines.

(a) Phase over current relay shall:

- have an inverse characteristic with a definite minimum time of 3 secs. at 10 times setting.
- have a variable setting range of 20-200% of rated current.
- have a characteristic angle of 45 degree.
- have a directional controlled low transient over-reach high set instantaneous unit of continuously variable setting range 5-20 times of rated current.
- be of voltage polarized directional controlled type.

(b) Directional earth-fault protection

Earth fault over current relay shall:

- be of zero-sequence voltage polarized directional controlled.
- have an inverse characteristic with a definite minimum time of 3 secs. at 10 times setting.
- have an adjustable setting range of 10-80% of rated current.
- have a directional controlled low transient over reach high set instantaneous unit with a continuously variable setting range of 5-20 times of rated current.
- have a characteristics angle of 45 degree.

**Non directional Over current and Earth fault protection for Outgoing feeders and Buscoupler.**



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- Over current Relay, Numerical Type with Instantaneous tripping for 1A (Secondary Current) and built in Earth fault Relay with Instantaneous Tripping for 1A rating.  
Accuracy Limit  $\rightarrow \pm 5.0\%$

#### Over Current Relay:

Setting range 5%-250% in steps of 5% (for Over current element)  
Setting range 50% to 2500% in steps of 50% (for High Set Element)  
Time Multiplier Setting range 0.025 Sec to 1.00 Sec in steps of 0.025 Sec  
Reset Delay 0 to 60 Sec in steps of 1 Sec

#### Earth fault Relay:

Setting range 5%-250% in steps of 5% (For Earth fault)  
Setting range 50% to 2500% in steps of 50% (for High Set Element)  
Time Multiplier Setting range 0.025 Sec to 1.00 Sec in steps of 0.025 Sec  
Reset Delay 0 to 60 Sec in steps of 1 Sec

**Characteristics Selection:** SI, EI, VI, LTI, DTL

### 1.9 CURRENT TRANSFORMERS:

- 1.9.1. The 11kV Metal clad Switchgear shall include protection and metering Current Transformers as specified. The Current Transformers shall be Epoxy Resin insulated block type. Current Transformers as follows:

| For Incomer Panel:                      | Ratio            | Accuracy Class | Burden |
|---|------------------|----------------|--------|
| -Core 1 (for Metering)                  | 1000-2000-2400/1 | 0.5            | 15VA   |
| -Core 2 (for Protection)                | 1000-2000-2400/1 | 5P20           | 15VA   |
| -Core 3 (Differential for Incomer only) | 1000-2000/1      | PS             | 15VA   |

#### For Outgoing Feeder Panel:

|                          | Ratio     | Accuracy Class | Burden |
|--------------------------|-----------|----------------|--------|
| -Core 1 (for Metering)   | 300-600/1 | 0.5            | 15VA   |
| -Core 2 (for Protection) | 300-600/1 | 5P20           | 15VA   |

| For Bus Coupler Panel:   | Ratio       | Accuracy Class | Burden |
|--------------------------|-------------|----------------|--------|
| -Core 1 (for Metering)   | 1000-2000/1 | 0.5            | 15VA   |
| -Core 2 (for Protection) | 1000-2000/1 | 5P20           | 15VA   |

The current transformer shall comply with the requirements of IEC 185 shall confirm to the specified insulation requirements and shall withstand without damage the applicable short-circuit current specified. Primary ratio taps shall not be accepted.

Maximum temperature rise at rated primary current shall not exceed 50 degree centigrade.

- 1.9.2 Each set of secondary windings shall be wired to suitable terminal blocks and earthed at the first control or relay panel to which they are connected.
- 1.9.3 The continuous thermal current rating shall be 150% of normal current rating.



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- 1.9.4 The Current Transformers shall be tested in accordance with IEC 185 and shall include the following Routine Tests:
- Verification of terminal markings polarity etc.
  - Power frequency tests on primary windings.
  - Partial Discharge Measurement
  - Power frequency withstand tests on secondary windings.
  - Power Frequency withstand test between sections
  - Over voltage inter-turn tests.
  - Determination of ratio error and phase displacement.

#### **1.10. VOLTAGE TRANSFORMERS**

- 1.10.1 The 11kV Metal clad Switchgear shall include Voltage Transformers in incomer as required by the Single Line Diagram as follows:
- Type : Epoxy-resin insulated, single pole with 7.3A Primary side fuses
  - Basic Impulse Level : 75kV
  - Rated Power Frequency Withstand Voltage: 28kV
  - Primary Voltage :  $11/\sqrt{3}$  kV
  - Secondary Circuit :  $110/\sqrt{3}$  V
  - Rated burden : 50 VA
  - Accuracy classification : 0.5 / 3P Class
- 1.10.2 The voltage transformers shall comply with the requirements of IEC 186. Accuracy class and burden shall be adequate to ensure the correct operation.
- 1.10.3 The voltage transformers and their fuses shall meet the specified insulation requirements and have a rated primary voltage of 11kV with knee of saturation curve not lower than 12kV and ratios per single line diagram.
- 1.10.4 The voltage transformer shall be provided with high rupturing capacity (HRC) fuses for primary and secondary circuits. The fuses shall be rated for the short circuit levels specified.
- 1.10.5 Each set of secondary windings shall be wired to suitable terminal blocks and earthed at the first control or relay panel to which they are connected.
- 1.10.6 Earth Fault Factor should not exceed 1.4 for effectively earthed system.
- 1.10.7 Continuous Rated Voltage Factor should be 1.2 and for 8h should be 1.5.
- 1.10.8 For hermitically sealed Potential Transformer the temperature rise of the oil at the top of the tank or housing shall not exceed 55K.
- 1.10.9 Power Frequency withstand voltage for the earthed terminal : The terminal of the primary winding intended to be earthed shall, when insulated from the case or frame, be capable of withstanding the rated power frequency short-duration withstand voltage of 3kV (r.m.s.)
- 1.10.10 The dielectric Dissipation Factor at  $U_m/\sqrt{3}$  and ambient should not exceed 0.005.



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- 1.10.11 The rated power frequency-withstand voltage for secondary winding insulation shall be 3kV (r.m.s.).
- 1.10.12 The Voltage Transformer shall be designed and constructed to withstand without damage, when energized at rated voltage, the mechanical and thermal effects of an external short-circuit for the duration of 1 Sec.
- 1.10.13 The voltage transformers shall be tested in accordance with IEC 186, and shall include the following routine tests:
- Verification of terminal markings.
  - High voltage power frequency withstand test on primary windings.
  - High voltage power frequency withstand test on secondary windings.
  - Partial Discharge Measurement.
  - Power Frequency Tests between sections
  - Determination of Errors

Repeated Power Frequency Tests on Primary windings shall be performed at 80% of the specified test voltage.

#### **1.11. SURGE ARRESTERS FOR INCOMER :**

- 1.11.1 The surge Arresters shall be 9kV, 10 kA of the gapless Zinc oxide type and suitable for operation under the service conditions specified and be suitable for the protection of Transformer and other substation equipments. The Arresters shall comply with IEC 99-1, IEC99-4.
- 1.11.2 The surge diverters shall be tested in accordance with IEC 99-4.
- 1.11.3 The manufacturer of Surge Arrester must be Valid ISO 9001:2000 holder.

#### **1.12 CONTROL PROTECTION AND INSTRUMENTATION:**

- 1.12.1 This covers the detailed requirements for design, manufacture, transport, installation and commissioning of 11kV Metal clad VCB switchgear.
- 1.12.2 The substation will normally be attended and operation will be semi-automatic. Normally closing of circuit breakers shall be manual operation and operation of earthing switches will be manual if it is not mentioned.
- 1.12.3 Local control facilities adjacent to the equipment shall be provided for maintenance, inspection and emergency operation.
- 1.12.4 The control system shall be designed to permit the following operating modes:
- 1.12.4.1 Automatic start/stop operation refers to spring-charged motor for operating mechanism of 11kV VCB.
- 1.12.4.2 Automatic tripping of 11kV VCB, LV MCB if faults occur in protected lines equipments or circuits.



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- 1.12.4.3 The control system shall be arranged in such way that it is possible to change between local automatic and local manual control any time.
- 1.12.4.4 The designs shall be in general conformity with the single line diagrams and layout drawings accompanying this specification.
- 1.12.4.5 Under manual control the individual operations shall each be subject to safety interlocks being satisfied.
- 1.12.4.6 The control scheme shall be operationally simple, safe, easy to maintain and functionally consistent.
- 1.12.4.7 Each module shall have sufficient test points to facilitate faultfinding. Control circuits shall be brought out to isolating terminals to permit efficient trouble shooting.
- 1.12.4.8 Each cubicle shall be provided with a sufficient point Annunciation Block to identify an alarm condition, including audible alarm, test, acknowledge and reset push buttons.
- 1.12.4.9 Control switches for circuit breakers shall be of the discrepancy type. Two independent movements shall be required to initiate an operation.
- 1.12.4.10 The design shall be such that as to avoid nuisance alarms and shall block those devices, which assume alarm conditions when the equipment is under shutdown. Annunciation Block windows shall be engraved with identification of the alarm condition.
- 1.12.5 **Annunciators shall have the following sequence:**
- | Condition           | Lamp | Alarm |
|---------------------|------|-------|
| Normal              | Off  | Off   |
| Alarm Flashing      | On   | On    |
| Acknowledge         | On   | Off   |
| Reset after return: |      |       |
| Normal              | Off  | Off   |
| Lamp test           | On   | Off   |
- 1.12.6 **Required signals or alarm systems:**
- CB Off / On position by green / red lamp
  - Flag or lamp indication of faults for:  
Over current Protection, E/F Protection, DC Supply Failure, CB Failure, MCB tripped, AC supply failure
- 1.7.7 The Annunciation Block shall be of solid-state type and suitable for operation at 110 V dc and shall be able to withstand IEC 255 class 3 tests without malfunctioning.

### Applicable for Switchgear Panels

**1.8 11kV Switchgear Panel (Incomer and Feeder) shall consist of metal-clad cubical fitted with:**

- Copper Busbar, 2000A 1 Set
- Fault making earth switch for cable earthing, hand operated with auxiliary switch 1 set
- Epoxy Resin insulated block type Current Transformer of ratio mentioned above in the clause 1.4.1. 1 set



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**Withdraw-able module with :**

- Hand operated drive mechanism 1 Set
- Auxiliary block with 4NO+ 4NC contacts for position indication 1 No.
- Multiple Pole lug for control signals 1 No.
- Vacuum circuit breaker with motor operated spring charged mechanism or solenoid operated mechanism 1 No.
- Close/trip buttons 1 No.
- Trip coil 1 No.
- Closing coil 1 No.
- Counter indicating number of switching operation 1 No.
- Auxiliary block with 11NO + 11NC 1Wi (alarm contact) 1 No.
- Auxiliary switch for spring charged indication 1 No.

**In the low voltage compartment the following equipment shall be mounted:**

- 2 pole miniature circuit breaker fitted with auxiliary switch 1NO+1NC 2 Nos.
- Single Ammeter Cl. 0.5 with A/S switch 1 Nos.  
(Range: 1000-2000-2400/1A for Incomer)  
(Range: 300-600/1A for Feeder Panel)  
(Range: 1000-2000/1A for Buscoupler Panel)
- Voltmeter, Digital Type of 0.5 Accuracy class with voltage selector Switch for **Incomer** only 1 No.
- MW Meter, Digital Type of 0.5 Accuracy Class 1 No.
- kWh meter for 3Phase 4Wire , accuracy class as specified with Test Pulse & Programming Facility 1 No.
- Local/remote selector switch 1 No.
- Numerical Over current relay with Built in Earth fault Relay as specified in 1.8 above 1 No.
- Annunciation Block 2x3 Matrix in Incomer Panel 1 No.
- Auxiliary relay and coupling relay 1 No.
- Anti condensation heater in cable compartment 1 No.

**Accessories shall consist of:**

- Emergency hand crank for the switch 1No.
- Operation handle for withdrawable module 1No.
- Operation handle for the earthing switch 1No.
- High voltage compartment keys 1No.
- Service Track for removing of withdrawal module 1No.
- Breaker Carriage 1No.
- 

**Additional Requirement for Buscoupler Panel**

- Voltage switching arrangements with necessary interlocks in the buscoupler panel, such that the voltage from both incomers, new and existing, can be switched incase the voltage is not available from the any one Incomer. The voltage shall be available to all panels, new and existing. Please provide necessary drawings and indicate any wiring modification required for the existing Incomer panels



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**APPENDIX-8.1**  
**TECHNICAL PARTICULARS OF 11 KV METAL CLAD VCB SWITCHGEAR**

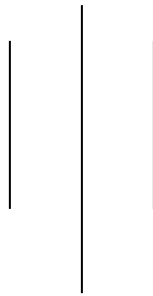
| S.N. | Descriptions  | Incomer/Buscoupler                               | Outgoing feeder               |
|------|---|--|-------------------------------|
| 1.   | Type  | Indoor   | Indoor                        |
| 2.   | Operating Mechanism   | 3 Pole Spring Operated Mechanism                 |                               |
| 2.   | Voltage rating:<br>a) Nominal system voltage<br>b) Rated maximum voltage  | 11 kV<br>12 kV                                   |                               |
| 3.   | Insulation level<br>a) Impulse withstand voltage (Peak)<br>Common Value-----<br>Across the Isolating Distance----<br>b) Power frequency withstand voltage (1 min.)<br>Common Value-----<br>Across the Isolating Distance----- | 75 kV<br>85kV<br><br>28 kV<br>32kV               |                               |
| 4.   | Frequency   | 50 Hz  |                               |
| 5.   | Current rating<br>a) Rated continuous current at ambient<br>b) Short Circuit Breaker Current<br>c) Short Circuit making current (1 sec)   | 2500A/2000 A,<br>2000A/2000 A<br>25 kA<br>62.5kA | 1250 A<br><br>25 kA<br>62.5kA |
| 6.   | Rated duration of Short Circuit (tk)  | 1Sec   | 1Sec                          |
| 7.   | <b>Rated Capacitive Switching Currents</b>  |  |                               |
| 7.1  | Rated Line Charging Breaking Current  | ≥10A   |                               |
| 7.2  | Rated Cable Charging Breaking Current   | ≥25A   |                               |
| 8.   | Auxiliary supply<br>a) Control circuit<br>b) Space heater and auxiliary equipment.<br>c) Spring Charging motor & circuit  | 110 V DC<br>AC, 3 ph-4W, 400V, 50 Hz<br>110V DC  |                               |
| 9.   | Re-closing duty cycle   | 0-15s-CO   |                               |
| 10.  | Total break time  | ≤ 60 mS  |                               |
| 11.  | Additional Auxiliary Contacts   | 6 NO, 6 NC                                       |                               |
| 12.  | Make time   | ≤ 100 mS   |                               |
| 13.  | First Pole to Clear actor   | 1.5  |                               |
| 14.  | Degree of Protection  | IP54   |                               |
| 15.  | Applicable standard   | IEC  |                               |
| 16.  | Valid ISO9001:2000 Certificate  | Yes  |                               |



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## SECTION-I, PART-9



### TECHNICAL SPECIFICATION (SPECIFICATION OF CABLES)



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## SECTION I, PART 9

### SPECIFICATION OF CABLES

#### 1 GENERAL

This specification covers the design, manufacture, factory test, supply, delivery, installation, field-testing and commissioning of all Power, Control, Communication and Instrumentation cables required for the entire project.

#### 2 DESIGN REQUIREMENTS

##### 33 kV Power Cable

##### a) General

The rated voltage of the power cables shall be 19/33(36) kV.

The power cable shall be cross-linked polyethylene insulated, screened and steel tape armoured.

##### b) Conductor

Conductor for power cable shall consist of stranded annealed copper wires. They shall comply with IEC Publication.

##### c) Cable Rating

The minimum current rating for the cable and conditions of installation shall be as follows:

The fault current for 1 sec. shall not be less than 15 kA.

The cable shall be single core 630sq. mm. per Phase.

##### d) Anti-Termite Covering

Anti-termite protection shall be applied to the cable and shall be black PVC suitable for the operating temperature of cable and shall meet the requirements of IEC standard.

##### e) Outer Covering

The outer covering of the cable shall be extruded, continuous black PVC suitable for the operating temperature of cable and shall meet the requirements of IEC standard.

##### f) Cable Drum

Cable drum shall be non- returnable and made of steel suitably protected against corrosion.

##### g) Outdoor and Indoor Termination



33 kV cable terminations shall be of the heat-shrinkable type / pre-moulded push on type. Terminations for cable shall be provided in sufficient quantities for complete installations of all feeders of the substations. The cost of all necessary termination kits shall be included in the price of the cables.

h) Jointing Accessories

Cables shall be installed in maximum possible lengths and straight-through jointing shall not be permitted without the prior written approval of the Employer.

i) Voltage Identification

The plastic covering shall be embossed with the name of the manufacturer, number of conductors, the cross sections, type of insulation followed by:

Electric cable - (Corresponding) volts

j) Phase Identification

Phase identification for either triplex or multi-core conductor cable shall be in accordance with the following:

Phase A ( R ) : Red  
Phase B ( Y ) : Yellow  
Phase C ( B ) : Blue



## **11 kV Power Cable**

a) General

The rated voltage of the power cables shall be 12 kV.

The power cable shall be cross-linked polyethylene insulated, screened and steel tape armoured.

b) Conductor

Conductor for power cable shall consist of stranded annealed copper/Aluminium wires. They shall comply with IEC Publication.

c) Cable Rating

The minimum current rating for the cable and conditions of installation shall be as follows:

The fault current for 1 sec. shall not be less than 15 kA.

The cable shall be copper single core 630sq.mm. & 400sq.mm. per Phase and Aluminium three core 300 sq.mm.

d) Anti-Termite Covering

Anti-termite protection shall be applied to the cable and shall be black PVC suitable for the operating temperature of cable and shall meet the requirements of IEC standard.

e) Outer Covering

The outer covering of the cable shall be extruded, continuous black PVC suitable for the operating temperature of cable and shall meet the requirements of IEC standard.

f) Cable Drum

Cable drum shall be non- returnable and made of steel suitably protected against corrosion.

g) Outdoor and Indoor Termination

11 kV cable terminations shall be of the heat-shrinkable type / pre-moulded push on type. Terminations for cable shall be provided in sufficient quantities for complete installations of all feeders of the substations. The cost of all necessary termination kits shall be included in the price of the cables.

h) Jointing Accessories

Cables shall be installed in maximum possible lengths and straight-through jointing shall not be permitted without the prior written approval of the Employer.

i) Voltage Identification



The plastic covering shall be embossed with the name of the manufacturer, number of conductors, the cross sections, type of insulation followed by:

Electric cable - (Corresponding) volts

j) Phase Identification

Phase identification for either triplex or multi-core conductor cable shall be in accordance with the following:

Phase A ( R ) : Red  
Phase B ( Y ) : Yellow  
Phase C ( B ) : Blue



## **600 Volt Power Cable**

a) General

The low voltage cables shall be 600 V grade polyethylene insulated and PVC sheathed. Low voltage AC power systems will be solidly grounded neutral with phase to phase voltage level of 400 V and phase to neutral voltage of 230V AC system and the DC system with 110V. The size of the single core conductor shall not be less than 2.5 sq. mm for lighting and 4 sq. mm for power. **The main (incomer) cable to AC distribution panel shall be three & half (3.5) core and not less than 120 sq. mm.**

b) Conductor

Conductor shall consist of stranded annealed copper wires. They shall comply with IEC publication. The cable is intended for use at normal conductor operating temperatures not exceeding 75 degree C.

c) Insulation

The electrically and thermally stable polyethylene insulation shall be extruded onto the conductor so as to prevent contamination and voids in the insulation.

d) Current Rating

The Contractor shall state the maximum continuous current rating and conditions of installation for low voltage power cables.

e) Jacket

The cable core assembly shall be covered with a flame-retardative and moisture resistant PVC jacket, which is free stripping from the insulation. The overall jacket shall be clean, dry, and free of grease and shall be suitable for ink or paint application.

f) Anti-termite protection shall be applied to the cable and shall consist of either a non-magnetic metallic barrier or layer of nylon sheathing.

g) Identification

- 1) Each cable shall have a printed legend on the overall jacket with the manufacturer's name, voltage class, the number and size of conductors, type of insulation.
- 2) The colors for core identification and color sequence shall be in accordance with follows
  - Single-core : Black
  - Twin : Red and black
  - Three-core : Red, yellow and blue
  - Four-core : Red, yellow, blue and black



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## **Control and Instrumentation Cable**

### **a) General**

All control and instrumentation cable shall be 600 V grade as per IEC standard, multi conductor, color-coded, PVC insulated armored cable. Each multicore cable shall have not less than 20 percent or 2 spare cores, whichever is the greater.

### **b) Conductor**

Copper conductor shall be stranded circular non-compacted cross-section of minimum 2.5 sq.mm. The Contractor shall calculate the load of CT core considering all connected loads and submit to the employer for approval. In case of CT burden constrain, CT circuit cable cross sectional area shall be increased. In this case the Contractor shall supply and install the cable required cross-section area without any additional cost to the Employer.

### **c) Insulation**

The electrically and thermally stable PVC insulation shall be extruded onto the conductor so as to prevent contamination and voids in the insulation.

### **d) Assembly**

- 1) Multicore conductor cables shall be assembled in accordance with applicable IEC standards.
- 2) A flame-retardative binder tape may be used underneath the overall jacket of multi-conductor cables, if required, to achieve the desired flame retardative characteristics. Tapes, if used, shall be non-hygroscopic.

### **e) Jacket**

- 1) The cable core assembly shall be covered with a flame retardative and resistant jacket, which is free stripping from the insulation.
- 2) The overall jacket shall be clean, dry, and free of grease and shall be suitable for ink or paint application.
- 3) Cable jacketing and the interstices within the jacket shall be free of water. Evidence of water shall be the ground for rejection of the cable.

### **f) Anti- Termite Covering**

Anti-termite protection shall be applied to the cable and shall consist of either a non-magnetic metallic barrier or layer of nylon sheathing.

### **g) Identification**

Each cable shall have a printed legend on the overall jacket, with the manufacturer's name, voltage class, the number and size of conductors, and a unique number or code indicating the production run or batch. The identification shall remain legible for the life of the cable.



## 2.4. SPECIAL REQUIREMENTS

Small cut piece lengths of cables will not be accepted. Cables up to 500 meters in length or as approved by Employer shall be of one length shipped in a drum of adequate size. For higher quantities, multiple lengths/drums may be shipped subject to the approval of Employer.

## 2.5. DRAWINGS, DATA & MANUALS

The following information shall be furnished along with the bid.

- a) Manufacturer's leaflets giving constructional details, dimensions and characteristics of different cables.
- b) Current rating of cables including derating factor due to grouping, ambient temperature and type of various installation.

## 2.6. TESTS

### 2.6.1 Routine and Design Tests

Power cable shall be subjected to following routine tests. As far as practical, the procedure of IEC shall be followed:

- a) Measurement of the electrical resistance of conductor
- b) Partial discharge test
- c) Voltage test

The power cable design tests shall include following:

- a) Partial discharge test
- b) Bending test, followed by a partial discharge test
- c) Tan delta measurement
- d) Heating cycle test, followed by a partial discharge test
- e) Impulse test, followed by voltage test
- f) Voltage test for 4 hours.

The Bidder shall submit copy of design test report from recognized testing laboratory for the offered power cable along with the bid.

### 2.6.2 Field Tests

After installation at Site, cables shall be subjected but not limited to the following tests:

- a) Measurement of insulation resistance
- b) *DC dielectric test*

## 2.7. PERFORMANCE GUARANTEE

The performance figures quoted on schedule of Technical Data shall be guaranteed within the tolerance permitted by relevant standards and shall become part of the Contract. In case of failure of



the cables to meet the guarantees, the Employer reserves the right to reject the item. The Contractor shall have to rectify/replace the defect/defective part at no extra cost to the Employer and without delaying the commissioning schedule.



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## SECTION I, PART 10

# SPECIFICATION OF GROUNDING SYSTEM



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## SECTION I, PART 10

### GROUNDING SYSTEM

#### 1. GENERAL

This specification covers the design, supply, delivery, installation and testing of the complete grounding system as described below.

The complete station grounding work shall be in accordance with the recommendation in the "Guide for Safety in Substation Grounding" IEEE No. 80 and the requirements of this section.

#### 2. GROUNDING INSTALLATION FEATURES

The installation shall be complete in all respects for efficient and trouble free service. All work shall be carried out in a first class neat workman like manner. Grounding conductors shall be handled carefully to avoid kinking and cutting of the conductors during laying and installation. All exposed ground conductors runs shall be taken in a neat manner, horizontal, vertical and parallel to building walls or columns and shall not be laid haphazardly.

- 2.2 For all connections made to equipment or to the structures, the grounding conductor, connectors and equipment enclosures shall have good clean contact surfaces. Grounding conductor connection to all electrical equipment, switchgear, transformers, motors, panels, conduit system, equipment enclosures, cable trays, distribution boards, equipment frames, bases, steel structure, etc. shall be by pressure type or bolting type connectors.
- 2.3 All lap, cross and tee connections between two grounding conductors shall be made by thermo-welding process or compression type connector. The various joints shall have adequate mechanical strength as well as necessary electrical conductivity not less than that of the parent conductors of the joints. All accessories for grounding installation shall be of quality and design approved by the Employer.
- 2.4 Ground conductors, when crossing underground trenches, directly laid underground pipe and equipment foundation, if any, shall be at least 300mm below the bottom elevation of such trenches/pipes.
- 2.5 The maximum size of each grid of grounding mat shall not exceed 4X4 meters. The terminals for connecting ground mat and equipment shall be terminated whenever necessary. *(The new grounding shall be bonded with existing grounding network.)*

#### 3 GROUNDING CONDUCTOR

##### 3.1 Main Ground Grid



The main ground system shall consist of a grounding grid buried minimum 0.6 meter below grade level. The grounding grid shall consist of minimum 25 x 4 mm copper flat conductor cable or minimum 100 sq. mm stranded copper wire.

### 3.2 Ground Electrodes

The ground electrodes shall be 16mm diameter and 3.0 meter long (min.) copper clad steel. These shall be driven into ground and connected to the main ground grid.

### 3.3 Risers

The risers shall consist of copper conductor of adequate size (but not less than 100 sq. mm.) connected at one end to the main ground mat and at the other end to the equipment.

## 4 DESIGN REQUIREMENTS

4.1 *The Contractor shall measure the soil resistivity in presence of the Employer. Based on the resistivity the contractor shall calculate the total length of buried ground conductor, number of grounding electrode and their depth and spacing to achieve a grounding system resistance of less than 1.0 (One) Ohm.*

4.2 The Contractor shall calculate the cross-section considering the maximum fault level of 25 kA.

4.3 The Contractor shall submit the details of calculations of the grounding system for the Employer's approval.

## 5 TESTS

On completion of the installation, either wholly or in sections, it shall be tested in compliance with relevant Code by the Contractor in presence of the Employer. The cost of any test including labor, material and equipment charges shall be borne by the Contractor. If the ground grid resistance can not be obtained as per his design, then additional grounding conductors shall be buried in the earth, or if necessary, buried in treated soil to obtain the required low ground resistance without any additional cost.

## 6 LIGHTNING PROTECTION

The outdoor equipment of the substation and the substation building shall be protected against lightning. The lightning protection shall be achieved by an overhead lightning shield system of galvanized steel wire of 7/3.35 mm, which shall be connected to the main grounding grid by steel conductor of 7/3.35 mm. The design of the lightning protection system shall be subject to the approval of the Employer.



## 7 DRAWINGS

After award of the Contract, the Contractor shall furnish the grounding layout drawing with dimensions showing the location of grounding grids, electrodes, test link chambers and risers, backed up by necessary calculations for Employer's approval. The work shall have to be started at site only after getting approval from the Employer. If alteration is required for any work done before getting Employer's approval, the same shall have to be done by the Contractor at no extra cost to the Employer.



## **APPENDIX 10**

### **STATION GROUNDING SYSTEM**

| DESCRIPTION                                   | UNIT  | REQD.             |
|---|-------|-------------------|
| <b>1. Main ground grid conductor material</b> |       | Copper            |
| <b>2. Main ground grid conductor size</b>     | Sq.mm | $\geq 100$        |
| <b>3. Cross section of riser conductors</b>   | sq mm | $\geq 100$        |
| <b>4. Ground electrodes</b>                   |       |                   |
| - Material                                    |       | Copper clad steel |
| - Diameter                                    | mm    | 16                |
| - Length                                      | meter | 3                 |
| <b>5. Material of risers</b>                  |       | Copper            |
| <b>6. Earthing system designed for</b>        | ohm   | $\leq 1$          |



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## PART 11 MISCELLANEOUS MATERIAL



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## PART 10 MISCELLANEOUS MATERIAL

### 1 GENERAL

This specification covers the design, fabrication, properly packing for transportation, delivery, installation, testing and putting into efficient and trouble-free operation of the bus materials, insulators and miscellaneous items complete with all accessories.

### 2 TECHNICAL REQUIREMENTS

#### 2.1 Insulators

##### a) General

All types of insulators shall satisfactorily withstand the specified climatic and service conditions. The strength of insulators as given by the electro-mechanical tests shall be such that the factor of safety when supporting their maximum working loads shall be not less than two and a half.

Design shall be such that stresses due to expansion and contraction in any part of the insulators and fittings do not lead to development of defects.

All insulators, whether cylindrical post or string shall have plain shed profiles.

Damaged insulators shall be replaced at no costs to the Employer.

##### b) Materials

Porcelain insulators shall be in accordance with IEC standards, where applicable. Porcelain shall be sound, free from defects and thoroughly vitrified and the glazed.

Porcelain glaze shall be smooth, hard, of uniform shade of brown and shall completely cover all exposed parts of the insulators. Outdoor insulator fittings shall remain unaffected by atmospheric conditions producing weathering, acids, alkalis, dust and rapid changes in temperature that may be experienced under working conditions.

Suspension and tension insulators shall comprise porcelain units with ball and socket fittings.

Retaining pins or locking devices for insulating units shall be of phosphor bronze or other approved material, and shall effectively prevent accidental separation of the units.

Unless otherwise approved, the individual units of both the suspension and tension insulator sets shall be identical and interchangeable.

##### c) Number of discs

|   |          |                  |         |
|---|----------|------------------|---------|
| - | 132 kV : | 11 Nos (minimum) | per set |
| - | 33 kV:   | 3 Nos (minimum)  | per set |

##### d) Marking



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Each insulator shall have marked on it the manufacturer's name or trademark, the year of manufacture and the manufacturer's reference mark. Tension and suspension insulators shall also be marked with the guaranteed electromechanical strength. Marks shall be legible and indelible.

e) Post insulator

Post insulator shall be cylindrical type, solid core porcelain, single stacked, provided in accordance with following requirements:

|                             | <u>Type A</u> | <u>Type B</u> | <u>Type C</u> |
|-----------------------------|---------------|---------------|---------------|
| - Rated voltage             | 145 kV        | 72.5 kV       | 36 kV         |
| - Nominal voltage           | 132 kV        | 66 kV         | 33 kV         |
| - Impulse withstand voltage | 650 kV        | 325 kV        | 170 kV        |
| - Color                     | Brown         | Brown         | Brown         |

Test shall be divided into three groups in accordance with IEC 168.

f) Standard particulars of insulator units

Insulator units shall comply with the following requirements. (IEC 305)

|    |                                       |           |
|----|---------------------------------------|-----------|
| 1) | Porcelain disc diameter               | 254 mm    |
| 2) | Unit spacing                          | 146 mm    |
| 3) | Creepage distance                     | 292 mm    |
| 4) | Electro mechanical failing load       | 12,000 kg |
| 5) | Dry power frequency withstand Voltage | 70 kV     |
| 6) | Wet power frequency withstand Voltage | 40 kV     |
| 7) | Dry impulse withstand voltage         | 120 kV    |
| 8) | Puncture voltage                      | 120 kV    |

Dimension and tolerances of ball and socket coupling shall comply with IEC Publications 120, and the internal height of the socket shall also comply with the requirements of IEC Publication 372-1 (1977)

2.2 Bus Conductor and Fittings



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The bus-bar system to be adopted shall be as follows:

- For 132 kV it shall be of double bus-bar type with single breaker connecting system.
- For 33 kV it shall be of single bus-bar type with single breaker connecting system. The bus-bar system shall be designed in such a way that at least one bay in each end can be extended in future without major construction.

a) General

Busbars and electrical connections in outdoor substations shall be in accordance with IEC, BS, ASTM or equivalent national standards in respect of current rating and material analysis.

Bus conductor to be supplied shall be aluminum tube for 132 kV and 33 kV. For connection purpose aluminum conductor steel reinforced may be used, if required. Minimum size and material of each bus shall be as following:

| <u>Bus</u>     | <u>Material</u> | <u>Min. Size</u> |
|----------------|-----------------|------------------|
| - 33 kV Main   | Al-Tube         | 100mm            |
| - 33 kV Branch | Al-Tube         | 75mm             |

The 33 kV bus-bars shall be designed for the following conditions:

|                  | <u>Current Carrying Capacity</u> | <u>Fault Level</u> |
|------------------|----------------------------------|--------------------|
| Main bus-bar -   | 1600 A                           | 25 kA              |
| Branch bus-bar - | 800 A                            | 25kA               |

The Contractor shall submit detailed calculation for approval.

Materials used for busbars and connections shall be stressed not to more than two-fifths of their elastic limit. Provision shall be made for expansion and contraction with variation in conductor temperature and busbars shall be arranged so that they may be readily extended in length with a minimum of disturbance to existing equipment.

Busbars shall be in continuous lengths between supports. Connectors shall be of approved type, and if necessary type tested. Connections dependent upon site welding techniques will not be permitted.

Busbars and connections shall be so arranged and supported that under no circumstances, including short circuit conditions, the clearances between live metal and earth, or between other conductors, cross the safe limit.

b) Strain Bus and Fittings

The conductor shall be of suitable size to withstand the full load current.



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At present the 33kV ACSR Conductor has been projected from 33kV Incomer Breaker to 132kV Gantry. From the 132kV Gantry 33kV Conductor has been dropped to 33kV Gantry near 33kV Bus.

For Power Transformer Nos. 1 and 3, the new 33kV Gantry shall be constructed near 33kV Incomer Breaker. The 33kV new Conductor of suitable size shall be projected from 33kV Incomer Breaker to that new 33kV Gantry. From that new 33kV Gantry, 33kV Conductor shall be stringed to 33kV existing Gantry near 33kV Bus.

The direction of lay of the outer layer shall be right-hand. The direction of lay shall be reversed in successive layers; continuous layer shall in all cases have opposite lay.

The external form and surface of the finished conductor shall be uniformly cylindrical upon completion of manufacture and shall remain so when erected in place on the line.

The surface of the conductor shall be free from points, sharp edges, abrasions or other departures from smoothness or uniformity that would tend to increase radio interference and corona loss. When the conductor is subjected to tensions up to 50 percent of its rated ultimate strength, the conductor surface shall not depart from its general cylindrical form, nor shall any of the strands move relative to each other in such a way as to get squeezed out of place and disturb the longitudinal smoothness of the conductor. Strands of a section of "popped" cable shall not protrude more than 1/2 of their diameter of a strand. The conductor shall be capable of withstanding the normal handling necessary for manufacture and erection, such as, reeling, unreeling, and pulling through stringing sheaves under sufficient tension to keep the conductor off the ground, etc., without being deformed from the cylindrical form that causes to increase radio interference and corona loss.

The make-up and lay of wires shall be such as to produce a conductor essentially free from a tendency to untwist or spring when cut. The steel wires shall be preformed or post-formed so that when the conductor is cut and the aluminum wires are stripped away from the core as required for splicing, the steel wires can be readily regrouped and easily held in place with one hand to allow a splicing sleeve to be slipped over the steel core wire at the cut end of the conductor.

This forming of the core is required and shall be done in a manner which will not in any way scratch, scrape, remove or otherwise damage the zinc coating of the steel core wires, individually or collectively.

The conductor shall be free from excessive amounts of die grease, metal particles and dirt. The Bidder shall describe in complete detail the method, which he proposes to use to clean the conductor in normal production. The effectiveness of the cleaning process shall be subject to verification.

Where dissimilar metals are in contact, approved means shall be provided to prevent electro-chemical action and corrosion. Unless otherwise approved, joints and surfaces of copper or copper alloy fittings shall be tinned.

Suspension and tension conductor clamps shall be of approved types and shall be as light as possible. Those for aluminum conductor shall preferably be compression



type. Suspension and tension clamps shall be designed to avoid any possibility of deforming the stranded conductor and separating the individual strands.

Tension conductor clamps shall not permit slipping of or damage to, or failure of the complete conductor or any part thereof, at a load less than 95 per cent of the ultimate strength of the conductor.

Clamps and fittings made of steel or malleable iron shall be galvanized. All bolts and nuts shall be as specified and shall be locked in an approved manner.

c) Tubular Bus and Fittings

Tubular bus shall be made of first melting aluminum alloy, cold rolled or hard-drawn and assembled using corona free fittings. The bus-bar shall be designed and manufactured in such a way to dampen any vibration.

The tubular bus conductor shall be designed to withstand mechanical forces due to short circuit currents; and its temperature when carrying full load current shall not exceed 75 degree C. A safety factor of 2 for normal working loads and 1.5 with short circuit currents shall be used. Vibration of bus shall be checked for the design wind conditions.

The tubular bus shall include a small drain hole in any low section. Where joints are required they shall be of the thin leaf type. They are required at all potheads and as required on bus bars. Bus supports for main tubular buses shall include rigid fixed conductor clamp with slide fit on adjacent supports.

All bus support clamps shall be cast of first melting aluminum alloy. Each clamp shall be adjustable for alignment with insulator and furnished with four galvanized steel mounting bolts.

- Bolted type clamps shall be furnished with first melting alloy and, bolts, nuts and washers shall be finished with an anodic coating and lubricated. The clamps for tubing shall have dimensions and sections suitable for splicing two pieces of tubing in the clamp.
- Flexible elements of expansion bus support clamps shall be laminated aluminum strap, which has current capacity equivalent to the tube.

Terminal connectors for aluminum shall be of first melting cast aluminum alloy. All terminal pads shall be furnished with stainless steel bolts, nuts and Bellville washers.

The bolted type terminal connectors shall be a multigrip type terminal and furnished with first melting aluminum alloy with bolts, nuts and washers finished with anionic coating and lubricated.

Bolted type connectors shall be furnished with first melting aluminum alloy with bolts, nuts and washers finished with anionic coating and lubricated.

Angle-connectors:



All angle connectors shall be of streamlined, bolted type and made of first melting cast aluminum alloy. Tap element sockets shall be deep enough to allow for error in cut-off.

- Couplers: All couplers shall be of bolted type and made of first melting cast aluminum alloy.
- Corona Bells: All corona bells shall be streamline internal type and cast of first melting aluminum alloy.

The Contractor shall submit calculations regarding selection of the size of the bus material for approval.

d) Overhead ground wire

Overhead shield wire shall be galvanized steel wire, stranded with a minimum cross sectional area of 61.7 sq mm and shall comply with BS 183.

Earthwires shall be greased as for conductors and the outer strands shall have a right hand lay.

Each completed shield wire shall be bare and shall be composed of the specified number of strands.

The nominal diameter of individual wires shall have a variation of not more than plus or minus one and one-half (1.5) percent.

Joints or splices may be made in the individual wires prior to drawings to final size or in the finished wire composing the strand. Such joints shall have protection to corrosion equivalent to that of the finished wire itself and shall not decrease the strength of the finished strand below the specified minimum breaking strength. Joints in the individual wires in the finished strand shall be separated by at least 15.2 meters.

All strands in the wire shall lay naturally in their true position in the completed cable, shall tend to remain in position when the cable is cut at any point, and shall permit restraining by hand after being forcibly raveled at the end of the cable. The strand shall be free from imperfections and consistent with good commercial practice with a carefully controlled finish completely free from any dirt, loose metal particles, nicks, scratches, abrasions or deformities of any nature.

Each item of material to be furnished by the Contractor shall be accompanied by the manufacturer's routine factory test certificates/reports.

### 3 TESTS

#### 3.1 Insulators

The insulators shall be tested in accordance with IEC standards. Certified copies of the tests shall be submitted for approval to the Employer.

a) Design tests



- Power frequency wet withstand voltage test
  - Critical - impulse flashover test
  - Impulse withstand test
  - Radio-interference voltage test
  - Compression strength test
  - Thermal shock test
- b) Quality conformance tests
- Visual and dimensional test
  - Porosity test
  - Galvanizing test
  - Cantilever strength test
  - Torsional strength test
  - Tensile strength test
- c) Routine tests
- Flashover test
  - Tension tests

### 3.2 Bus Materials

Following shop tests shall be performed by the manufacturer on the bus material. The Contractor shall submit such test reports to the Employer for approval before dispatch.

- a) Aluminum Tube
- General inspection
  - Chemical composition of aluminum alloy
  - Conductivity measurement of aluminum tube
  - Dimension and weight measurement
  - Certified report of aluminum alloy from the original manufacturer
- b) Bus Support Clamp and Connector
- General inspection
  - Dimension measurement
  - Chemical composition of aluminum alloy
  - Certified report of aluminum alloy from the original manufacturer
- c) Connectors for Stranded Conductor
- General inspection
  - Measurement of dimensions
  - Compression tests
  - Certified report of aluminum alloy from the original manufacturer
- d) Miscellaneous Hardware



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- General inspection
- Measurement of dimensions
- Tension test
- Galvanizing test

## **4 PACKAGING AND MARKING**

### **4.1 Insulator**

#### **a) Packaging**

The insulators shall be packed in strong wooden boxes with a waterproof lining. These boxes shall provide adequate protection against salt spray, chemical attack and damage that might be encountered in transportation and rough handling during loading, transportation to job site, unloading to temporary storage, ocean transportation, etc.

#### **b) Marking**

In addition to marks required for shipping purposes, each crate and pallet shall be marked with shipper's identity, Employer's name and address and quantity and type of contents etc. Also, the gross, tare and net weights in kilograms shall be stenciled on each pallet.

### **4.2 Bus Materials**

#### **a) Packing**

The conductor shall be furnished on non-returnable wooden reels, and shall be properly protected to prevent displacement, chafing, distortion, damage from corrosive atmosphere or other damage to the conductor, which might be encountered in shipping, storage for handling, etc. Each layer of conductor shall be separated from the adjacent layer in such a manner as to prevent abrasion or other damage during handling and shipping.

The non-returnable reels shall be made of strong materials suitably strengthened for ocean transport and treated to withstand rotting or any type of damages due to ocean atmosphere. The reels shall be capable of withstanding all stresses due to braking and string operations. The Employer will accept the use of returnable reels, but any additional costs in disposing such reels shall be the responsibility of the Contractor.

#### **b) Marking**

In addition to marks required for shipping purposes, each reel-head shall be stenciled to show serial number, type of conductor, length of conductor in meters, the gross, tare, and net weights in kilograms. Each reel shall also be plainly marked to indicate the direction in which it should be rolled to prevent loosening of the conductor on the reel. Those reels from which test samples were taken shall be marked "TESTED" with length of sample conductor removed and removal included in the markings.

## **5 GUARANTEE**

### **5.1 Any defects in materials or workmanship or other failure to meet requirements of these specifications, which are disclosed prior to the Operational Acceptance Certificate by the**



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Employer, be corrected entirely (including removal and replacement) at the expense of the Contractor.

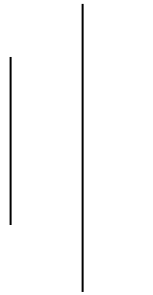
- 5.2.1 Any latent defects not disclosed before date of the Operational Acceptance Certificate but disclosed within Defects Liability Period shall be corrected promptly by and at the expense of the Contractor.



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## SECTION-I, PART-12



### TECHNICAL SPECIFICATION (CIVIL WORKS)



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## SECTION I, PART-12

### CIVIL WORKS

#### 1. GENERAL

This specification covers the general requirements for Design, Manufacture, Test, Supply and Construction of Civil works necessary for the erection of Equipments at the various substations.

The Contractor shall perform the works to meet the requirements of this Specification, the attached drawings and the relevant Articles in these Contract Documents.

#### 2. STANDARD AND REFERENCES.

All equipment, materials, fabrication and tests under these Specifications shall conform to the latest applicable standards, manuals and Specifications contained in the following list or to equivalent applicable standards, manuals and Specifications established and approved in the country of manufacturer, and approved as equal by Employer.

|      |  |
|------|--|
| ACI  | American Concrete Institute              |
| AISC | American Institute of Steel Construction |
| ANSI | American National Standard Institute     |
| ASCE | American Society of Civil Engineers      |
| ASTM | American Society for Testing Materials   |
| AWS  | American Welding Society                 |
| JIS  | Japanese Industrial Standards            |
| DIN  | Dueches Industries Norms                 |

Any details not specifically covered by these standards and Specifications shall be subject to approval of Employer. In the event of contradictory requirements between the standards and these Specification requirements, the terms of the Specifications shall apply.

Unless specifically mentioned reference to standards and specifications or to equipment and materials of the particular manufacture shall be considered as followed by "or equivalent". The Contractor may propose equivalent specifications, materials or equipment, which shall be equal in every respect to that specified. If the Contractor for any reason proposes equivalents to or, deviates from, the above standard, the Contractor shall state the exact nature of the change and shall submit complete specifications of the materials, as well as copies of pertinent standards, for the approval of Employer and decision of Employer in the matter of quality will be the final.

#### 3. SCOPE OF WORKS.



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- 3.1 Site Installation. All offices, housing facilities, plants and equipment, temporary structures and works, temporary construction and access road and everything else which will be used or needed for the performance of the Works shall be considered part of the Contract.

#### 4. DESIGN OF CIVIL WORK.

The Contractor shall perform detailed design for each structure and on the basis of the design criteria and codes or regulations of international standards.

Prior to proceeding with the design work, design conditions or design values that shall include other allowable stress safety factor, load conditions, and applicable standards shall be approved by Employer.

The Contractor shall submit to Employer for approval the Contractor's drawing, structural and other calculation sheets, bill of materials, construction method and schedule for the construction of civil works.

In case modification of detailed design of civil work is required, the Contractor shall promptly inform Employer and shall submit modified drawings to Employer for approval.

No separate or direct payment will be made to the Contractor for design works. All costs incurred in connections therewith shall be included in the unit/lump sum bid prices for the construction of various structures, foundations, etc.

#### 5 FOUNDATIONS AND CONCRETE WORK.

##### 5.1 Foundation Works

##### 5.1.1 General Requirement.

The design of the foundation for all the substation steel structures, electro-mechanical equipment's, control building to be constructed shall be the responsibility of the Contractor. All designs and details shall be subject to approval of Employer. Approval of designs by Employer in no way relieves the Contractor of responsibility for an inadequate foundation design.

Where new transformers are to replace existing transformers, the Contractor shall investigate the technical feasibility of using the existing foundations for the new transformers. In case, the existing foundations are not suitable, the Contractor shall remove them from site.

##### Design loads

Foundations shall be actual working loads applied to the foundations by the equipment and structures. The foundations shall be designed to resist all vertical and lateral forces, uplift forces and overturning moments with a minimum factor of safety of 1.5.

##### Bearing loads

The Contractor shall use an allowable soil bearing pressure of 1.0kg/sq.cm for the design of the foundation for the purpose of bidding, but this is only reference value. After award of



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Contract, the Contractor shall carry out detail soil test and detail design of foundation based on the soil test result. There may be variation in the volume of work in final design compared to the bidding design, for which the Contractor will not get any extra payment.

### **Uplift and overturning loads**

The uplift and overturning resistance of concrete spread footings shall be assumed as the weight of a volume of earth in the form of an inverted frustum of a cone or pyramid. The cone or pyramid height shall be 30 cm less than the depth from finish grade to the top of the concrete mat, the base area shall be the top area of the mat and the top area shall be determined by the intersection of planes starting at the mat edges and sloping outward at a 20 degree cone angle from the vertical and the horizontal plane 30 cm below finish grade.

Unit weights for overturning resistance

The following unit weights shall be used for design:

- a) Soil .....1,200kg/m<sup>3</sup>
- b) Concrete .....1,600kg/m<sup>3</sup>

### **5.1.2 Details.**

Detail Calculation. Detail calculations for each type of foundation shall be submitted for approval of Employer. Such details shall show the following requirements:

- 1. Calculation of loads acting on foundation under different conditions.
- 2. Calculated safety factor for each type of stability and condition.
- 3. Maximum stresses in concrete and in steel reinforcement at any critical section.

### **Line and Grade.**

The Contractor shall provide all lines and grades or elevation of the ground at each footing and set the necessary stakes that are required for the work and will be held responsible for their accuracy. Employer may check lines and levels set by the Contractor from time to time, but the responsibility for their accuracy shall rest entirely with the Contractor.

### **Detail Drawings.**

Details of each type of foundation submitted for Employer's approval shall be as shown on the approved design drawings and shall conform to the requirements described hereafter. No change shall be made without the written approval of Employer. The detail drawings shall at least include:

- 1. Detail dimensions of foundation.
- 2. Detail of setting dimensions of foundation.



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3. Details of placing of all reinforcing steel which shall conform to the Building Code Requirements for Reinforced Concrete (ACI 318) and the Manual of Standard Practice of Detailing Reinforced Concrete Structure (ACI 315) unless otherwise as specified herein.
4. Details of type, size and length of each reinforcing steel including details of bar bending.

## **6 EARTH WORK**

### **Earth work**

#### **Excavation.**

Excavation shall conform to the dimensions and elevations as shown on the approved drawings. The general cut slope shall not be steeper than 1: 1.5; however, where the Contractor shall not excavate the slope to satisfy the condition above, temporary supports to the sides of excavations shall be required by means of timbering, sheet piling or shoring.

When foundations rest on an excavated surface other than rock, special care shall be taken not to disturb the bottom of the excavation. When subsoil for foundations become mucky on top due to construction operation or any other reason, such subsoil shall be removed and replaced by one or more layers of compacted sand or compacted crushed rock, as directed by Employer.

Excavated materials suitable for use as backfill shall be deposited by the Contractor in storage piles at the area approved by Employer. However, surplus excavated materials shall also be hauled and transported to the disposal area designated by Employer.

#### **Backfill.**

The Contractor shall place and compact the backfill materials to the lines, grades and dimensions to be shown on the approved drawings. The materials to be used for backfill, the amount thereof and the manner of depositing the materials shall be approved by Employer.

#### **Payment**

No separate or direct payment will be made to the Contractor for earth work in foundations. All costs incurred in connections therewith shall be included in the unit/lump sum bid prices for the construction of various foundations, etc.

## **7 CONCRETE WORKS**

Concrete work shall mean and include all and every concrete work for the civil work. The Contractor shall perform the concrete work in strict conformity to the Specification and as directed by Employer and shall inform Employer at least 24 hours in advance, of the times and places at which he intends to place concrete.

### **7.1 Composition of Concrete.**

#### **General Mix Composition.**



The concrete shall be composed of cement, fine aggregate, coarse aggregate, water and admixtures as specified. All materials shall be well mixed and brought to the proper consistency.

The mix proportions shall be as follows:

|  |                        |
|--|------------------------|
| Minimum compressive strength (28 days) | 210 kg/cm <sup>2</sup> |
| Minimum cement content                 | 300 kg/cm <sup>3</sup> |
| Maximum water cement ratio             | 0.6                    |
| Maximum slump                          | 10 cm.                 |

The detailed mix proportion shall be submitted to Employer for approval on the basis of producing concrete having suitable workability, consistency, density, impermeability, durability, and required strength, with concrete compressive strength test records. If 210kg/sq.cm. Strength of 28 days concrete cannot be achieved with the above cement content, more cement shall be used for which the Contractor will not receive any extra payment.

### **Consistency.**

The detailed mix proportions shall be submitted to Employer for approval to secure concrete of the proper consistency and to adjust for any variation in the moisture content or grading of the aggregate as they enter the mixer. Addition of water to compensate for stiffening of the concrete before placing will not be permitted. Uniformity in concrete consistency from batch to batch will be required.

### **Lean Concrete.**

Lean concrete of minimum 5 cm. thickness shall be used under all foundations with the ratio of cement: fine aggregate: coarse aggregate equal to 1:3:5 (by volume)

## **7.2 Cement**

Quality. The Contractor shall furnish normal Portland cement in fifty (50) kg net weight sacks.

The cement for the civil work shall conform to the requirements of "Portland cement, Type I" designated in ASTM C150. Where conditions require the use of high sulphate resistance cement, cement conforming to the requirements of ASTM C150 Type V shall be used without any cost to Employer.

## **7.3 Coarse Aggregate**

### **Quantity.**

Coarse aggregate shall conform to the requirements of ASTM C 33 and shall be either natural gravel or manufactured coarse aggregate. Coarse aggregate shall consist of well-shaped clean, hard, dense, durable rock fragments and shall not contain wood chips and any other impurities.



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### **Grading.**

Coarse aggregate shall be graded for each maximum size within the standard limits specified as follows:

#### **Percentage passing by weight**

| Designation of size in inch<br>(Sieves with square openings) <u>inch</u> | 2<br><u>inch</u> | 1-1/2<br><u>inch</u> | 1<br><u>inch</u> | 3/4<br><u>inch</u> | 3/8 | No.4 |
|--|------------------|----------------------|------------------|--------------------|-----|------|
| 40 mm  | 100              | 90to                 | 20to             | 0to                | 0to |      |
| (1-1/2 to 3/4 inch)  |                  | 100                  | 55               | 15                 | 5   |      |
| 20 mm  | -                | 100                  | 90to             | 20to               | 0to |      |
| (3/4 inch to No.4)   |                  |                      |                  | 100                | 55  | 10   |

## **7.4 Fine Aggregate.**

### **Quality.**

Fine aggregate shall conform to the requirements of ASTM C33 and shall be natural sand or manufactured sand. It shall consist of clean, hard, dense and durable rock particles, free from injurious amounts of dust, silt, stone powder, pieces of thin stone, alkali, organic matter and other impurities.

### **Grading.**

The fine aggregate as batched shall be well graded, and when tested shall conform to the following limits:

| <u>Sieve size</u>   | <u>Percentage passing by weight</u> |
|---------------------|-------------------------------------|
| 9.51mm (3/8 inch)   | 100                                 |
| 4.76 mm (No.4)      | 95 to 100                           |
| 2.38 mm (No.8)      | 80 to 100                           |
| 1.19 mm (No.16)     | 50 to 85                            |
| 595 micron (No.30)  | 25 to 60                            |
| 297 micron (No.50)  | 10 to 30                            |
| 149 micron (No.100) | 2 to 10                             |

## **7.5 Admixture.**

The Contractor shall use admixture, if required, listed below in order to improve the quality of concrete or mortar such as workability and finishability and water tightness.

|  |             |
|--|-------------|
| Air-entraining agent                   | - ASTM C260 |
| Water-reducing and set retarding agent | - ASTM C494 |
| Plasticizer                            |             |

The cost of the material and all costs incidental to their use shall be included in the unit price bid in the Price Schedule for concrete in which the materials are used.

## **7.6 Batching and Mixing.**



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The Contractor shall provide equipment and shall maintain and operate the equipment to produce the required quality of concrete.

When any mixer produces unsatisfactory results, Employer may direct the Contractor to increase the mixing time or repair the mixing blades, and the Contractor shall promptly carry out the directions of Employer.

The order of feeding the materials into the mixer shall be subject to approval of Employer. If concrete is to be mixed by hand, it shall be subject to approval of Employer.

## 7.7 **Placing of Concrete.**

### **General Conditions.**

Prior to placing concrete, the Contractor shall submit to Employer for approval the mixed proportion, the characteristics of each materials of concrete, the concrete placing schedule, placing equipment, and method of execution of work. No concrete shall be placed until all formwork, treatment of surface, placing of reinforcement and other parts to be embedded have been inspected and approved by Employer.

Placing of concrete shall not be permitted under the following conditions, unless specifically approved by Employer.

1. When it rains.
2. When illumination is imperfect for night work.
3. When Employer orders to stop.

### **Preparation for Placing.**

Treatment of foundation surfaces. All surfaces of foundation upon or against which the concrete is to be placed shall be cleaned and moistened thoroughly before the placing. When concrete is placed upon or against earth foundations, the Contractor shall, in accordance with the direction of Employer, remove all objectionable substances such as standing water, flowing water, fragments of wood.

Treatment of surfaces of construction joints. Prior to placing the concrete upon or against the hardened concrete, the surface of the construction joints shall be cleaned, moistened and removed of all laitance, defectable or loose concrete, and unsound foreign materials.

### **Transporting and Conveying.**

The concrete which has elapsed more than 60 minutes after being discharged from the mixer and/or in which slump loss exceeds 3.0 cm as it is delivered to the site for placing shall be disposed of at the place designated by Employer. All such wasted concrete shall be borne to the Contractor's account. Concrete shall be placed with a vertical drop not greater than 1.0 m except where suitable equipment is provided to prevent segregation or where specifically authorized.



Concrete which has segregated during transportation shall be remixed. Retempering of concrete shall not be permitted.

### **Placing.**

After the surface of unformed construction joint has been cleaned and the placing of concrete has been approved by Employer in accordance with the provisions of the preceding sub-Articles, surface of unformed construction joint shall be covered with a layer of mortar approximately 1.5 cm thick. The Contractor shall place concrete upon the fresh mortar before it begins to set. The mortar shall be of richer cement content than concrete without coarse aggregate. The cost of the mortar shall be included in the bid unit price for the foundation lot.

Concrete shall be deposited in all cases, as nearly as practicable, directly in its final position and shall not be caused to flow such that will permit lateral movement or cause segregation of the coarse aggregate, mortar or water from the concrete mass.

### **Consolidation.**

Immediately after placing, every layer of concrete shall be consolidated to the maximum practicable density so that it closes snugly against all surfaces of reinforcement bars and embedded fixtures and against all corners of the forms. Consolidation of concrete shall be by electric or pneumatic power-driven, immersion-type vibrators or other approved means.

## **7.8 Concrete Construction Tolerance.**

Variation in alignment, grade and dimension of the structures from the established alignment, grade and dimensions shall be remedied or removed and replaced by the Contractor at his own expense.

## **7.9 Repair of Concrete.**

The Contractor shall repair at his own expense the imperfections of concrete surfaces and the irregularities which do not meet the specified dimensions. Repairing work shall be performed and completed within 24 hours after the removal of forms, in accordance with the direction of Employer.

## **7.10 Curing.**

Prior to placing concrete, the Contractor shall obtain Employer's approval in respect of the method to protect and cure concrete and the facilities he proposes to use. After concrete has been placed, it shall be protected and cured strictly in accordance with the method approved by Employer.

All costs for the curing of concrete shall be included in the unit price bid for foundation lot.

## **7.11 Forms.**

### **General Conditions.**

Forms shall be used, wherever necessary, to confine and shape the concrete to the required lines, and as directed by Employer. Forms shall have sufficient strength to withstand the



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pressure resulting from placing and vibrating of the concrete, and shall be maintained rigidly in positions. Forms shall be sufficiently tight to prevent loss of mortar from the concrete. Each form shall be so prepared that each section may be removed individually without injuring the concrete.

The costs of all labor and materials for forms and for any necessary treatment of coating of forms shall be included in the unit price bid for foundation lot, for which the forms are to be used. No separate payment will be made for form.

### **Removal of Forms.**

Forms shall not be removed without the approval of Employer. As a rule, the forms shall be removed at the following minimum times after concrete has been placed.

|                                    |         |
|------------------------------------|---------|
| Side form of column and wall       | 2 days  |
| Supporting form of floors and beam | 28 days |

## **7.12 Grouting**

Grouting for seating structural steel members and equipment on foundations shall be non-shrink (not-setting) Portland cement mortar grout, or a suitable commercially available grout, at the Contractor's option. Grouting shall be done under pressure by means of an expanding agent or by means of a static head. Proportioning and mixing of grout shall conform to the following:

- (a) Mortar grout containing aluminum powder as an expansive agent mixture of 1 part cement and 2 parts sand, by weight, with a water-cement ratio not exceeding 0.55. The quantity of aluminum powder used shall be approximately 0.005 percent of the weight of cement, the actual quantity to be determined from tests with materials to be used, and at the temperature and under the conditions of placement. Aluminum powder shall be blended with cement in proportions of one part powder to 50 parts cement, by weight, and the blend shall be sprinkled over the dry batch. After all ingredients are added, the batch shall be mixed for 3 minutes. Grout which has not been placed within 45 minutes shall be wasted.
- (b) In lieu of use of an expansive agent, settlement shall be reduced by extending the mixing period or by delaying final mixture to minimize the interval between time of placement and initial set and placement the understatic header pressure. The mortar grout shall be a mixture of one part cement and 2.5 parts sand, with a minimum necessary to enable placement.

### **Payment:**

No separate or direct payment will be made to the Contractor for Grouting. All cost incurred in connection therewith shall be included in the unit sum bid price for the construction of the various foundation types.

## **7.13 Tests.**



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The Contractor shall make all necessary tests for determining the mixed proportions of each type of concrete, including tests of aggregates, so as to produce the concrete specified in Item 14.7.1.

In order to control the quality of concrete to be placed, the Contractor shall perform the following field tests:

**Slump Test.**

A slump test will be made from each of the first three batches mixed each day. An additional slump test will be made for each additional 40 cubic meters of concrete placed in any one day. Slump will be determined in accordance with ASTM C 143.

**Compression Test.**

Three sets of three concrete compression test cylinders will be made each day when concrete is placed or as directed by Employer. One set of each group will be tested at an age of 7 days and the other set will be tested at an age of 28 days. The third set will be an extra set to be tested only if needed. If the compressive strength indicates a compressive strength of less than 210 kg/sq.cm. Employer will determine what remedial measures are necessary and the Contractor shall perform the remedial measures at his own expense.

Concrete test cubes/cylinders will be made, cured, and stored in accordance with ASTM C31. Concrete cubes/cylinders will be tested in accordance with ASTM C39.

No separate or direct payment will be made to the Contractor for tests. All costs for the tests shall be included in the unit bid price for the construction of various foundation types.

**7.14 Measurement for payment.**

Measurement for payment for the Contract item, "Concrete Foundation" shall be on the basis of the actual unit/lump sum of each type of foundation constructed by the Contractor.

- a) Performing detail foundation designs and preparation of construction drawing including bar-bending schedule.
- b) Supplying and transporting all foundation materials to job site.
- c) Excavating, dewatering, form works, providing 10cm thick soiling layer providing 5cm thick (1M3M6) lean concrete layer, form works and backfilling for the foundations and all other related operations.

**8 STEEL REINFORCEMENT.**

The Contractor shall place all the reinforcement bars in the concrete structures as shown on the approved drawings and as directed by Employer. The reinforcement bars shall be furnished by the Contractor.

**Quality.**



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The reinforcement bars used for the concrete structure shall be torsteel reinforcing bars and dimensions, shapes, tensile strength, yield point, elongation and other properties, shall conform to BS 1144 or equivalent.

### **Placing.**

Reinforcement bars shall be accurately placed and special care shall be exercised to prevent the reinforcement bars from being displaced during the placement of concrete. Intersecting points and splices of the reinforcement bars shall be fixed by using suitable clips or annealed wires, the diameter of which shall be no less than No.16 gauge. The reinforcement bars in structures shall be placed and supported by use of concrete blocks, metal spacers, metal hangers or other satisfactory devices to ensure required coverage between the reinforcement bars and the surface of concrete. Drawings of bar lists shall be submitted for approval. The cost of binding wires, cutting and placing of steel bars shall be included in the unit price bid for foundation lot.

### **Payment**

No separate or direct payment will be made to the Contractor for Concrete Reinforcing Steel in foundations. All costs incurred in connection therewith shall be included in the unit bid price for the construction of the various foundation types.

## **9. SUBSTATION STEEL STRUCTURES**

### **9.1 General Requirements.**

The Contractor shall assume full responsibility for design and details of the steel structures and for their satisfactory performance. All designs and details shall be subject to approval of Employer. Employer shall have the right to instruct the Contractor to make any changes to conform to the Contract Document. Elevations of all structures shall be compatible with the existing structures.

No omissions or ambiguities on the drawings or in these Specification will relieve the Contractor from furnishing first class materials and workmanship. Should any inaccuracies be found the Contractor shall notify Employer and any further work done before these discrepancies are corrected will be at the Contractor's risk.

### **9.2 Materials.**

The materials shall conform to the following requirements:

| Item | Description  | Unit               | Minimum Value |
|------|--|--------------------|---------------|
| 1.   | Tensile and Yield strength<br>The quality of steel used for support members and bolts. |                    |               |
| 1.1  | Mild steel   |                    |               |
|      | (a) Tensile strength   | kg/mm <sup>2</sup> | 24            |
|      | (b) Yield strength   | kg/mm <sup>2</sup> | 14            |



|     |                      |                    |    |
|-----|----------------------|--------------------|----|
| 1.2 | High strength steel  |                    |    |
|     | (a) Tensile strength | kg/mm <sup>2</sup> | 36 |
|     | (b) Yield strength   | kg/mm <sup>2</sup> | 20 |

### 9.3 Design of Steel Structures.

#### Design Methods.

The stress analysis shall be conducted by the force diagram method for all type of steel structures. Any computer programs to be employed, shall be prepared or approved by a recognized institute and be submitted to Employer.

#### Loading Conditions.

In additions to dynamic loads imposed by equipment, steelwork shall be design to withstand simultaneously wind and other loads as follows:

#### Design Load.

##### a. Wind Load.

On flat steel surface 121 kg/m<sup>2</sup>

For lattice structures 121 kg/m<sup>2</sup> of 1.71 times the projected area of the members of one face of the structure

On line trap, disconnecting switch 50 kg/m<sup>2</sup>

On overhead ground wire,  
Conductor 75 kg/m<sup>2</sup>

On porcelain insulator  
Strings and all other section 50 kg/m<sup>2</sup>

##### b. Human Load. 240 kg at the center of the beam.

##### c. Load due to conductor and weight of equipment and accessories.

Loads due to the ACSR conductor shall be wind load, dead weight and short circuit forces.

Weight of equipment including insulator string shall be according to actual installation.

#### Normal Working Condition.

The normal working condition for various loads shall be deemed to work simultaneously. The take-off structure shall be subjected to a vertical uplift of 500 kg. at each supporting point of overhead ground wire and conductor. The tension for conductor and ground wire will be 750 and 350 kg respectively and angle of deviation will be 15°.

#### Combination of loads.



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The Contractor shall calculate the maximum and minimum stresses at any combinations of loading conditions.

### **Safety Factors.**

The safety factors shall be not less than two (2) times for normal working conditions and 1.5 in combination with short circuit forces.

### **Design and Ultimate Stress Allowed in Design.**

For tensile members of steel structure the design stress shall not exceed the yield point of materials even under test loading condition. For compressive members the design stress shall not exceed the value of the ultimate buckling stress.

Ultimate stress allowed in design shall be as follows :

Members:

|          |   |
|----------|---|
| Buckling | As per ASCE Manuals and Reports on Engineering Practice-No. 52. |
| Tension  | less than 1.00 Fy   |
| Bearing  | less than 1.80 Fy   |

**Bolts:**

|         |                   |
|---------|-------------------|
| Shear   | less than 0.60 Fu |
| Bearing | less than 1.00 Fu |

Where : Fy : Yield point of steel member materials  
Fu : Ultimate tensile stress of bolt materials

### **Limit of Effective Slenderness Ratio.**

The effective slenderness ratio (L/r) of members shall meet the following limits:

Leg member, main compression member and ground wire peaks = 120

Other members having computed compressive stresses = 200

Secondary members without computed compressive stresses = 250

Tension member = 350

Where : L : Length of the unsupported panel of member  
r : Radius of gyration of members.

In determining the slenderness ratio for various member, suitable provisions shall be taken into consideration for various types of end connections, eccentricity of load transfer in the members etc. The unsupported length "L" shall be considered from centre to centre of intersections or working lines at both ends of members. A single bolt connection shall not be considered as offering restraint against rotation. A multiple bolt connection with minimum two (2) bolts; properly detailed to minimize eccentricities shall be considered to offer partial restraint, if such connection is to a member having adequate strength to resist rotation of joint. Points of intermediate supports shall not be considered as offering full restraint to rotation, if the same is provided only on one flange of the member. For members of



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double-diagonal web system which are bolted at their point of intersection, max  $L/r$  shall be determined from the following criteria:

'L' is the greatest distance from the point of the intersection to either of the end connections and 'r' is the minimum radius of gyration of the member.

'L' is equal to 0.75 times the distance between the end connections and 'r' is the radius of gyration of the member for its axis parallel to the plane of connected leg.

### **Minimum Thickness and Size of Steel Members.**

Minimum thickness and size of steel members of structures shall be as follows:

|   |                        |
|---|------------------------|
| Calculated members                                  | 40x5 mm                |
| All other stressed members<br>and secondary members | not less than L40x4 mm |
| Gusset plates                                       | not less than 5 mm     |
| Bolts and nuts                                      | M-12 mm                |

In computing the net section of tension members, the diameter of the bolt holes shall be taken as 3.0 mm greater than the nominal diameter of the bolts. Net section on both straight and zigzag sections across the members shall be as specified in ASCE or BS.

### **Connections.**

- a. **Bolts.** All connections shall be bolted and all stressed members shall be connected by at least one(1) bolt. For structural connections, a maximum of two bolt sizes may be used for each tower type provided the quantity of each size is not less than 20 per cent of the total requirement for the tower and the bolts in any one connection are uniform in size.
- b. **Splices.** The number of splices shall be practically minimum. Splices shall develop the maximum stress in member or seventy (70%) percent of compressive strength of gross section or tensile stress of net section. No credit shall be allowed for bearing on abutting areas.

### **Design Drawings and Calculation.**

The design drawings shall show the following data and information

Scaled line diagram of the steel structures showing all redundant bracing members and their sizes completely dimensioned and proving compliance with all clearance requirements.

All loadings and their manners of application including the determination of wind load (wind load on structure shall be applied at each panel point along the height of the steel structure.)

Calculations showing:

- a. Total stresses in each member for each loading case and the critical case.



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- b. The effective slenderness ratio, calculated stress ratio of maximum total stress to calculated stress for each member and strength of connection.
- c. The estimated weight of the complete galvanized steel structures.
- d. Size and type of steel for each member and number of bolts required for its connection.
- e. The compression and uplift reactions and corresponding horizontal shears at each leg of all steel structures (column and equipment supports) for all loading cases.

#### 9.4 Detailing

Detailing shall be as follows:

General. Steel structure dimensions, framing, member sizes and length, number, size and length of bolts, thickness of each filler, and other necessary details to fabricate each piece shall be shown on the approved detail drawings. No change shall be made without the written approval of Employer.

All web members shall be in one piece where practicable. All double diagonal web system members shall be connected at their point of intersection by at least one bolt.

Step Bolts. Step bolts shall be of 16 mm diameter and shall have round or hexagonal head. Each step bolt shall be provided with two hexagonal nuts. The minimum bolt length and length of unthreaded portion shall be 180 and 125 mm respectively. Step bolts shall not be used as connection bolts.

The step bolts shall be spaced alternately on the inner gauge line on each face of the angle about 40 cm centers. They shall be furnished for one leg of each steel tower from the base elevation of the steel tower.

Step bolts for lattice single pole or H-frames are not required.

##### U-Bolts.

U-bolts shall be suitably furnished on steel structures to suspend or terminate insulator strings or ground wire assemblies. Size of U-bolt shall withstand all loads acting on it.

##### Detail Drawings.

Detail drawings shall be complete with sizes and detail dimensions of all steel structure members. At each joint, there shall be the number, size and length of bolts, number and size of fillers and detail dimensions of gusset plate, if any.

##### Bill of Material.

Bill of materials shall give the size length and galvanized weight of each member and the total weights of steel structures. It shall also include the number of bolts, nuts and washer per structure.

#### 9.5 Fabrications.

##### Workmanship.



Workmanship shall be first class throughout. All pieces must be straight, true to detail drawings and free from lamination flaws and other defects. All clipping, backcuts, grindings, bends, holes and etc. must be true to detail drawings and free of burrs.

All identical pieces bearing the same erection number must be exactly interchangeable with each other and interchangeable in their relative position in all towers or structures of which they form a part.

Threads of bolts and nuts shall be cleanly rolled or cut and the face and head of nut shall be truly at right angle to the axis of the bolt.

### **Cleaning and Galvanizing.**

- a. Cleaning. After fabrication has been completed and accepted, all materials shall be clear of rust, loose scale, dirt, oil, grease and other foreign substances.
- b. Galvanizing. All materials shall be hot-dip galvanized after fabrication and cleaning. Retapping of nuts after galvanizing is not required.

Galvanizing for structural mild steel products shall meet the requirements of ASTM A123. All holes in materials shall be free of excess splinter after galvanizing.

Galvanizing for bolts, nuts, washers, lock nuts, step bolts and similar hardware shall meet requirements of ASTM A153. Excess spelter on bolts, nuts, washers, lockouts, step bolts and similar hardware shall be removed by appropriate means acceptable to Employer.

Finished materials shall be dipped into the solution of dichromate after galvanizing for white rust protection during sea transportation.

- c. Uniformity of Coating. The uniformity of coating test shall be made in accordance with ASTM A239. The minimum repetition times for one minute dip in uniformity test shall be as follows :

Steel shapes and plates..... 6  
Bolts, nuts and similar hardware.....4

### **Galvanizing Coating Weight**

| Description               | Thickness | Coating Weight (g/sq.m) |               | Uniformity Test<br>(1 min./1 time) |
|---------------------------|-----------|-------------------------|---------------|------------------------------------|
|                           |           | Average Value           | Minimum Value |                                    |
| Shaped steel              | Over 6mm  | more than 700           | more than 610 | more than 6                        |
| Steel plates              | Under 6mm | more than 610           | more than 550 | more than 6                        |
| Bolts, Nuts & washers etc |           | more than 470           | more than 400 | more than 4                        |

- d. Straightening after Galvanizing. All plates and shapes which have been warped by the galvanizing process shall be straightened by being rerolled or pressed. The materials shall not be hammered or otherwise straightened in a manner that will injure the protective coating. If, in the opinion of Employer, the material has been



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hardfully bent or warped in the process of galvanizing or fabrication, such defects shall be cause for rejection.

- e. Repair of Galvanizing. Materials on which galvanizing has been damaged shall be acid stripped and regalvanized, unless, in the opinion of Employer, the damage is local and can be repaired by zinc spraying or by applying a coating of galvanizing repair compound. Where regalvanizing is required, any member which becomes damaged after having been dipped twice shall be rejected.
- f. Shop Assembly. One of each type of steel structure shall be assembled in the shop to such an extent as to insure proper field erection. Reaming of untrue holes will not be permitted. A reasonable amount of drifting will be allowed in assembling. Shop assembled parts shall be dismantled for shipment.

## 9.6 Shop Test.

The following shop test shall be performed with relevant provisions of the ASTM.

- a) General inspection
- b) Material tests
- c) Assembly test
- d) Galvanizing test

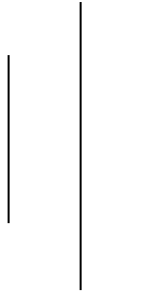
The Contractor shall furnish four certified copies of report of all tests to Employer. The cost of all tests and reports shall be borne by the Contractor.

## 9.7 Payment

Payment for the Contract item, “Steel Structures” will be made at the unit / lump sum price per steel structures type bid therefor in the Price Schedule, which unit/lump sum price shall include full compensation for all costs incurred in furnishing all materials, equipment and labor and all other operations related to steel structure design, fabrication, installation etc.



## SECTION-I, PART-13



### SHIFTING WORK OF POWER TRANSFORMERS



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## Scope of Works

Shifting of Power transformers with Accessories as per BOQ.

- a. Above transformers with all its accessories shall be transported as per BOQ. During transportation, transformer should be properly sealed with dummy plates and gaskets such as to prevent any chance of moisture ingress inside the tank or leakage of oil.

Means like Trolley, Crane & other accessories required during the Whole work are required to be arranged by the Contractor. The Bidders shall submit proof of Ownership of the Crane / Trolley or shall enclose Certificate from the Owner providing them on hire basis if they were awarded the Tender.

### Insurance & Guarantee

- b. The Transformer is to be shifted and transported to destination Separately. That is like Radiators, Bushings, Conservator tank as mentioned above.
- c. The transformer should be insured with reputable company, for any damage during Loading, Transportation, and unloading etc.
- d. The Contractor shall provide and maintain insurance applying to all shipments of Goods & Services with continuous coverage from existing site to destination Site as specified in the Bid Package, for the period of **3 months beyond the date of completion of all the specified work at NEA's site.**
- e. The Insurance shall cover the following risks, and not limited to them, during Handling, Transportation, Unloading of the Power Transformer. In Case of Damage to Transformer, all the cost needed for rectification / replacement by new one, shall be borne by the Insurance.
- f. Loading and Unloading
- g. Transportation of Transformer
- h. In case of damage to the transformer or any problem during transit and during unloading, all the cost required for rectification / replacement by new one, shall be borne by the Insurance. In such case, the defect liability period for such repaired transformer shall be **12 months from date of commissioning of repaired transformer.**
- i. **The insurance provided shall cover all risks including marine insurance if applicable, and the minimum limits of insurance shall be the total cost plus 10% of the materials delivered to the NEA warehouse sites as specified in the Bid Packages.**
- j. **The Estimated total Cost of the 132/33kV 63 MVA Transformer is NRs. 80 Million(Approx), 132/33kV 30 MVA Transformer is NRs. 60 Million(Approx), 132/11kV 30 MVA Transformer is NRs. 60 Million(Approx), 132/11kV 22.5 MVA Transformer is NRs. 45 Million(Approx) and 33/11kV 16.6 MVA Transformer is NRs. 40 Million(Approx) . Therefore, the insurance for the transformers shall be separate for Estimated Cost + 10% of Estimated Cost.**



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## SECTION - II TECHNICAL DATA SHEET



**ITEM No. 1: 132/33kV, 100MVA POWER TRANSFORMER**

| ITEM No.1: POWER TRANSFORMER |  |       |                                  | Sheet 1 of 6        |
|------------------------------|--|-------|----------------------------------|---------------------|
|                              | DESCRIPTION  | UNIT  | NEA REQ                          | DATA to be Filled   |
|                              |  |       |                                  | 132/33kV, 80/100MVA |
| 1                            | Manufacturer and Country of Origin                     |       |                                  |                     |
| 2                            | Year of manufacturing experience                       | Years | 10                               |                     |
| 3                            | Manufacturing's Designation as per submitted catalogue |       |                                  |                     |
| 4                            | Applicable standard                                    |       | IEC                              |                     |
| 5                            | Type   |       | Outdoor, oil immersed, Core Type |                     |
| 6                            | Winding / Phase  |       | Three                            |                     |
| 7                            | Cooling  |       | ONAN / ONAF                      |                     |
| 8                            | Ratings  |       |                                  |                     |
| 8.1                          | Rated MVA  |       |                                  |                     |
| 8.1.1                        | ONAN   | MVA   | 80                               |                     |
| 8.1.2                        | ONAF   | MVA   | 100                              |                     |
| 8.2                          | Rated Voltage  |       |                                  |                     |
| 8.2.1                        | Primary  | kV    | 132                              |                     |
| 8.2.2                        | Secondary  | kV    | 33                               |                     |
| 8.2.3                        | Tertiary (If Provided)                                 | kV    | 11                               |                     |
| 8.3                          | Maximum Voltage  |       |                                  |                     |
| 8.3.1                        | Primary  | kV    | 145                              |                     |
| 8.3.2                        | Secondary  | kV    | 36                               |                     |
| 8.3.3                        | Tertiary (If Provided)                                 | kV    | 12                               |                     |
| 8.4                          | Number of Phases                                       |       | Three                            |                     |
| 8.5                          | Rated Frequency  | Hz    | 50                               |                     |
| 9                            | Noise Level  |       |                                  |                     |
|                              | On ONAN Rating   | dB    | <73                              |                     |
|                              | On ONAF Rating Rated Voltage                           | dB    | <75                              |                     |
| 10                           | Temperature Rise                                       |       |                                  |                     |
| 10.1                         | Temperature Rise above 45°C ambient                    |       |                                  |                     |
|                              | - In Oil by Thermometer                                | °C    | 50                               |                     |
|                              | - In Winding By Resistance                             | °C    | 55                               |                     |
| 10.2                         | Hottest Spot Temperature in Winding Limited to         | °C    | 55                               |                     |
| 10.3                         | Temperature Indicators Make                            |       | KHILSTROM, Sweden or Equi.       |                     |
| 11                           | Connection   |       |                                  |                     |
| 11.1                         | High Voltage   |       | Star                             |                     |
| 11.2                         | Low Voltage  |       | Star                             |                     |
| 11.3                         | Tertiary (If provided)                                 |       | Delta                            |                     |
| 11.4                         | Vector Group Ref in accordance with IEC 76             |       | YNyn0                            |                     |





| ITEM No.1: POWER TRANSFORMER |   |  | Sheet 2 of 6                                  |                     |
|------------------------------|---|--|---|---------------------|
|                              | DESCRIPTION   | UNIT   | NEA REQ                                       | DATA to be Filled   |
|                              |   |  |   | 132/33kV, 80/100MVA |
| 11.5                         | Vector Group<br>(If tertiary provided)  |  | YNyn0 Dll                                     |                     |
| 12                           | Taps  |  |   |                     |
| 12.1                         | Type of Tap changer   |  | OLTC  |                     |
| 12.2                         | Tap Step  |  | 1.25%   |                     |
| 12.3                         | Tap Range   |  | ± 10%   |                     |
| 12.4                         | Nos. of Tap   |  | 17  |                     |
| 13                           | Cooling Equipment (For ONAF)  |  |   |                     |
| 13.1                         | Manufacturer/ Type  |  |   |                     |
| 13.2                         | Number of Fans Connected  | Nos  |   |                     |
| 13.3                         | Rated Operating Voltage, Vac  | Vac  | 230/400, 50Hz                                 |                     |
| 13.4                         | Rated Control Voltage, V  | Vdc  | 110   |                     |
| 13.5                         | Rated Power   | kW   |   |                     |
| 14                           | OLTC Gear   |  |   |                     |
| 14.1                         | Manufacturer / Type   | MR Germany, ABB Sweden or<br>equivalent/ Vacuum Type |   |                     |
| 14.2                         | Rating<br>- Rated Voltage<br>- Rated Current<br>- Step Voltage<br>- Numbers of Steps  | kV<br>A<br>V<br>Nos                                  | Suitable for 132kV<br>Class<br><br>17         |                     |
| 14.3                         | Control Suitable For<br>- Remote / Local Operation<br>- Auto / Manual Operation<br>- Parallel Operation<br>- Master Slave Operation | Yes/No<br>Yes/No                                     | Remote / Local<br>Auto / Manual<br>Yes<br>Yes |                     |
| 14.4                         | Rated voltage of Drive Motor  | Vac  | 230/400 50Hz                                  |                     |
| 15                           | Guaranteed losses   |  |   |                     |
| 15.1                         | No Load Losses at Rated Voltage and Frequency on Max. MVA Base.   | kW   |   |                     |
| 15.2                         | Load Losses at rated Current and at 75°C on max. MVA base   | kW   |   |                     |
| 15.3                         | Cooler Losses for full load operation on max. MVA base  | kW   |   |                     |
| 16                           | Impedance at Rated Current and Frequency at 75°C Winding Temperatures on ONAF, MVA Base. (Tolerance ±7.5% of the Declared Value)    | %  |   |                     |
| 16.1                         | Positive Sequence Impedance at nameplate Normal tap   | %  | 12.50%  |                     |
| 16.2                         | Positive Sequence at Maximum Voltage Tap (Tap 17)   | %  |   |                     |
| 16.3                         | Positive Sequence at Minimum Voltage Tap (Tap 1)  | %  |   |                     |



|                                     |   |             |                  |                          |
|-------------------------------------|---|-------------|------------------|--------------------------|
| 16.4                                | Zero Sequence at Nameplate Tap  |             |                  |                          |
| <b>ITEM No.1: POWER TRANSFORMER</b> |   |             |                  | <b>Sheet 3 of 6</b>      |
|                                     | <b>DESCRIPTION</b>  | <b>UNIT</b> | <b>NEA REQ</b>   | <b>DATA to be Filled</b> |
|                                     |   |             |                  | 132/33kV,80/100MVA       |
| 17                                  | Reactance at rated current and Frequency at 75°C on Maximum MVA base at a nameplate tap |             |                  |                          |
| 18                                  | Efficiency at 75°C Winding Temperature at PF=0.9  |             |                  |                          |
| 18.1                                | At 100% Load  | %           |                  |                          |
| 18.2                                | At 75% Load   | %           |                  |                          |
| 18.3                                | At 50% Load   | %           | Above 99%        |                          |
| 19                                  | Load in Percentage of Full Load and Power Factor at which maximum efficiency occurs.    |             |                  |                          |
| 20                                  | Regulation at full Load and at 75C  |             |                  |                          |
| 20.1                                | At Unity Power Factor   |             |                  |                          |
| 20.2                                | At 0.85 Power Factor Lagging  |             |                  |                          |
| 21                                  | No Load Current in Percentage of rated Current referred to HV and 50Hz.                 |             |                  |                          |
| 21.1                                | At 90% Rated Voltage  | %           |                  |                          |
| 21.2                                | At 100% Rated Voltage   | %           | <1               |                          |
| 21.3                                | At 110% Rated Voltage   | %           |                  |                          |
| 22                                  | Clearances  |             |                  |                          |
| 22.1                                | Minimum Clearances in air-HV/LV   | mm          |                  |                          |
| 22.2                                | Between Phases Between Phase and Earth  | mm          |                  |                          |
| 23                                  | Insulation Level  |             |                  |                          |
| 23.1                                | Power Frequency Withstand Voltage (1Min rms)  |             |                  |                          |
| 23.1.1                              | Primary   | kV          | 275              |                          |
| 23.1.2                              | Secondary   | kV          | 70               |                          |
| 23.1.3                              | Tertiary (if Provided)  | kV          | 28               |                          |
| 23.2                                | Impulse Withstand Voltage   |             |                  |                          |
| 23.2.1                              | Primary   | kV          | 650 (Crest)      |                          |
| 23.2.2                              | Secondary   | kV          | 170 (Crest)      |                          |
| 23.2.2                              | Tertiary(if Provided)   | kV          | 75 (Crest)       |                          |
| 24                                  | Details of Oil Preservation System  |             |                  |                          |
| 24.1                                | Type  |             | Conservator Type |                          |
| 24.2                                | Details of Oil Preservation System  |             |                  |                          |
| 24.3                                | If Conservator Type, Urethane Air Cell provided   | Yes/No      | Yes              |                          |
| 24.4                                | Volume of Conservator   | Cu.m        |                  |                          |
| 24.5                                | Volume of Oil Between the highest and Lowest Levels                                     | Ltrs        |                  |                          |



| ITEM No.1: POWER TRANSFORMER |  |                    | Sheet 4 of 6                                  |                    |
|------------------------------|--|--------------------|---|--------------------|
|                              | DESCRIPTION  | UNIT               | NEA REQ                                       | DATA to be Filled  |
|                              |  |                    |   | 132/33kV,80/100MVA |
| <b>24.6</b>                  | <b>Breather</b>  |                    |   |                    |
| i.                           | Manufacturer and Country of origin                           |                    |   |                    |
| ii.                          | Manufacturer's Type designation                              |                    |   |                    |
| iii.                         | Type   |                    | Maintenance Free                              |                    |
| 25                           | Pressure Relief Device<br>Min. pressure setting              | kg/cm2             |   |                    |
| 26<br>26.1                   | Details of Bushings HV / LV / Neutral<br>Manufacturer / Type |                    |   |                    |
| 26.2                         | Voltage class  | kV                 | 145/36/12                                     |                    |
| 26.2                         | Creepage Distance  | mm                 | 25mm/kV                                       |                    |
| 26.3                         | Weight of Bushing  | kg                 |   |                    |
| 26.4                         | Standard Reference   |                    | IEC   |                    |
| 26.5                         | Dry Flash over Voltage                                       | kV                 | 275/70/28                                     |                    |
| 26.6                         | Wet Flash Over Voltage                                       | kV                 | 275/70/28                                     |                    |
| 26.7                         | Impulse Withstand Voltage                                    | kV                 | 650/170/75                                    |                    |
| 27                           | Insulating Oil   |                    |   |                    |
| i                            | Manufacturer and Country of Origin                           |                    |   |                    |
| ii                           | Manufacturer's type designation                              |                    |   |                    |
| iii                          | Type   |                    | Insulating Oil                                |                    |
| iv                           | Applicable standard  |                    |   |                    |
| v                            | Technical Specifications                                     |                    |   |                    |
| v.1                          | Dielectric Breakdown Strength (Min) at 2.5mm gap             | kV                 | 30  |                    |
| v.2                          | Flash Point (Min)  | °C                 | 135   |                    |
| v.3                          | Density at 20°C (Max)  | g/Cu.cm            | 0.895   |                    |
| v.4                          | Viscosity at 40°C (Max)                                      | mm <sup>2</sup> /s | 12  |                    |
| v.5                          | Viscosity at -30°C (Max)                                     | mm <sup>2</sup> /s | 1800  |                    |
| v.6                          | Acidity Neutralization Value (Max)                           | mgKOH /g           | 0.01  |                    |
| v.7                          | Sludge Value (Max)   |                    | 0.1%  |                    |
| v.8                          | Pour Point (Max)   | °C                 | -40 C   |                    |
| v.9                          | Corrosive Sulphur  |                    | Non-corrosive                                 |                    |
| v.10                         | Water Content (Max)  | ppm                | 40  |                    |
| v.11                         | Dielectric Dissipation factor at 90 (Max)                    |                    | 0.005   |                    |
| v.12                         | Appearance   |                    | clean free from sediment and suspended matter |                    |
| vi.                          | PCB Content  |                    | Not Detectable                                |                    |
| vii.                         | Approx. volume of Oil, ltrs                                  |                    |   |                    |
| viii                         | Whether First filled of Oil with 5% excess provided          | Yes/No             | Yes   |                    |
| 28                           | Core Material  |                    |   |                    |



| ITEM No.1: POWER TRANSFORMER |   |                        | Sheet 5 of 6                        |                    |
|------------------------------|---|------------------------|-------------------------------------|--------------------|
|                              | DESCRIPTION   | UNIT                   | NEA REQ                             | DATA to be Filled  |
|                              |   |                        |                                     | 132/33kV,80/100MVA |
| 28.1                         | Maximum flux density at rated voltage on principal tapping and rated frequency: |                        |                                     |                    |
|                              | Transformer legs  | T                      |                                     |                    |
|                              | Transformer yokes   | T                      |                                     |                    |
| 28.2                         | Maximum flux density at 110% voltage  |                        |                                     |                    |
|                              | Transformer legs  | T                      | < 1.9                               |                    |
|                              | Transformer yokes   | T                      | < 1.9                               |                    |
| 28.3                         | Grade of core used  | Prime core             |                                     |                    |
|                              | Type of Core  | CRGO                   |                                     |                    |
|                              | Thickness of core lamination  |                        |                                     |                    |
|                              | Rated Loss per kg   |                        |                                     |                    |
| 29.1                         | Maximum current density in windings at rated output:                            |                        |                                     |                    |
|                              | Primary (HV)  | A/mm <sup>2</sup>      |                                     |                    |
|                              | Secondary (LV)  | A/mm <sup>2</sup>      |                                     |                    |
|                              | Weight of copper in windings:   |                        |                                     |                    |
|                              | Primary (HV)  |                        |                                     |                    |
|                              | Secondary (LV)  |                        |                                     |                    |
| 30                           | Bushing Current Transformers  |                        |                                     |                    |
| 30.1                         | Numbers of Cores<br>- HV<br>- LV<br>- Neutral                                   | Nos<br>Nos<br>Nos      | 1 / phase<br>1 / phase<br>1         |                    |
| 30.2                         | Accuracy class / Burden/Ratio<br>- HV / HV Neutral<br>- LV / LV Neutral         |                        | PS / 15VA/450/1<br>PS / 15VA/1800/1 |                    |
| 31                           | Lightning Arrestor mounted on<br>- HV<br>- LV                                   | Yes/No<br>Yes/No       | No<br>Yes                           |                    |
| 32                           | RTCC Panel Details  |                        |                                     |                    |
| 32.1                         | AVR make / Model  | MR Germany, ABB Sweden |                                     |                    |
| 32.2                         | Annunciator 12 Windows provided   | Yes/No                 | Yes                                 |                    |
| 32.3                         | Indicating Voltmeter  | Yes/No                 | Yes                                 |                    |
| 32.4                         | Facilities and Provision as per specification provided?                         | Yes/No                 | Yes                                 |                    |
| 33                           | Approximate Overall Dimension ( L x W x H )                                     | m                      | 9.2 x 4.9 x 6.8 (Approx.)           |                    |
| 34                           | Approximate Weights   | Metric Ton             | 140 (Approx.)                       |                    |
| 34.1                         | Core and Coil   | kg                     |                                     |                    |



|                                     |   |             |                |                          |
|-------------------------------------|---|-------------|----------------|--------------------------|
| 34.2                                | Tank and fittings   | kg          |                |                          |
| <b>ITEM No.1: POWER TRANSFORMER</b> |   |             |                | <b>Sheet 6 of 6</b>      |
|                                     | <b>DESCRIPTION</b>  | <b>UNIT</b> | <b>NEA REQ</b> | <b>DATA to be Filled</b> |
|                                     |   |             |                | 132/33kV,80/100MVA       |
| 34.3                                | Oil   | kg          |                |                          |
| 34.4                                | Total Weight  | kg          |                |                          |
| 35                                  | Delivery of Equipment in Months, following the Award of Contract (Allowing the time for Drawing Approval) |             | Months         |                          |
| 36                                  | Is manufacturer ISO 9001 holder?  | Yes/No      | Yes            |                          |
| 37                                  | Type test certificate submitted?  | Yes/No      | Yes            |                          |
| 38                                  | Has manufacturer exported units?  | Yes/No      | Yes            |                          |
| 39                                  | User's certificate submitted?   | Yes/No      | Yes            |                          |
| 40                                  | Technical literature / drawings submitted?  | Yes/No      | Yes            |                          |

Deviations from technical requirements:

Signed.....

As representative for.....

Address.....

Date.....



**ITEM No. 2: 132/33kV, 63MVA POWER TRANSFORMER**

| ITEM No.1: POWER TRANSFORMER |  |       |                                  | Sheet 1 of 6           |
|------------------------------|--|-------|----------------------------------|------------------------|
|                              | DESCRIPTION  | UNIT  | NEA REQ                          | DATA to be Filled      |
|                              |  |       |                                  | 132/33kV,40/51.5/63MVA |
| 1                            | Manufacturer and Country of Origin                     |       |                                  |                        |
| 2                            | Year of manufacturing experience                       | Years | 10                               |                        |
| 3                            | Manufacturing's Designation as per submitted catalogue |       |                                  |                        |
| 4                            | Applicable standard                                    |       | IEC                              |                        |
| 5                            | Type   |       | Outdoor, oil immersed, Core Type |                        |
| 6                            | Winding / Phase  |       | Three                            |                        |
| 7                            | Cooling  |       | ONAN / ONAF / ONAF               |                        |
| 8                            | Ratings  |       |                                  |                        |
| 8.1                          | Rated MVA  |       |                                  |                        |
| 8.1.1                        | ONAN   | MVA   | 40                               |                        |
| 8.1.2                        | ONAF   | MVA   | 51.5/63                          |                        |
| 8.2                          | Rated Voltage  |       |                                  |                        |
| 8.2.1                        | Primary  | kV    | 132                              |                        |
| 8.2.2                        | Secondary  | kV    | 33                               |                        |
| 8.2.3                        | Tertiary (If Provided)                                 | kV    | 11                               |                        |
| 8.3                          | Maximum Voltage  |       |                                  |                        |
| 8.3.1                        | Primary  | kV    | 145                              |                        |
| 8.3.2                        | Secondary  | kV    | 36                               |                        |
| 8.3.3                        | Tertiary (If Provided)                                 | kV    | 12                               |                        |
| 8.4                          | Number of Phases                                       |       | Three                            |                        |
| 8.5                          | Rated Frequency  | Hz    | 50                               |                        |
| 9                            | Noise Level  |       |                                  |                        |
|                              | On ONAN Rating   | dB    | <73                              |                        |
|                              | On ONAF Rating Rated Voltage                           | dB    | <75                              |                        |
| 10                           | Temperature Rise                                       |       |                                  |                        |
| 10.1                         | Temperature Rise above 45°C ambient                    |       |                                  |                        |
|                              | - In Oil by Thermometer                                | °C    | 50                               |                        |
|                              | - In Winding By Resistance                             | °C    | 55                               |                        |
| 10.2                         | Hottest Spot Temperature in Winding Limited to         | °C    | 55                               |                        |
| 10.3                         | Temperature Indicators Make                            |       | KHILSTROM, Sweden or Equi.       |                        |
| 11                           | Connection   |       |                                  |                        |
| 11.1                         | High Voltage   |       | Star                             |                        |
| 11.2                         | Low Voltage  |       | Star                             |                        |
| 11.3                         | Tertiary (If provided)                                 |       | Delta                            |                        |



| ITEM No.2: POWER TRANSFORMER |   |   |   | Sheet 2 of 6           |
|------------------------------|---|---|---|------------------------|
|                              | DESCRIPTION   | UNIT  | NEA REQ                                       | DATA to be Filled      |
|                              |   |   |   | 132/33kV,40/51.5/63MVA |
| 11.4                         | Vector Group Ref in accordance with IEC 76  |   | YNyn0   |                        |
| 11.5                         | Vector Group<br>(If tertiary provided)  |   | YNyn0 Dll                                     |                        |
| 12                           | Taps  |   |   |                        |
| 12.1                         | Type of Tap changer   |   | OLTC  |                        |
| 12.2                         | Tap Step  |   | 1.25%   |                        |
| 12.3                         | Tap Range   |   | ± 10%   |                        |
| 12.4                         | Nos. of Tap   |   | 17  |                        |
| 13                           | Cooling Equipment (For ONAF)  |   |   |                        |
| 13.1                         | Manufacturer/ Type  |   |   |                        |
| 13.2                         | Number of Fans Connected  | Nos   |   |                        |
| 13.3                         | Rated Operating Voltage, Vac  | Vac   | 230/400, 50Hz                                 |                        |
| 13.4                         | Rated Control Voltage, V  | Vdc   | 110   |                        |
| 13.5                         | Rated Power   | kW  |   |                        |
| 14                           | OLTC Gear   |   |   |                        |
| 14.1                         | Manufacturer / Type   | MR Germany, ABB<br>Sweden or equivalent/<br>Vacuum Type |   |                        |
| 14.2                         | Rating<br>- Rated Voltage<br>- Rated Current<br>- Step Voltage<br>- Numbers of Steps  | kV<br>A<br>V<br>Nos                                     | Suitable for<br>132kV Class<br><br>17         |                        |
| 14.3                         | Control Suitable For<br>- Remote / Local Operation<br>- Auto / Manual Operation<br>- Parallel Operation<br>- Master Slave Operation | Yes/No<br>Yes/No  | Remote / Local<br>Auto / Manual<br>Yes<br>Yes |                        |
| 14.4                         | Rated voltage of Drive Motor  | Vac   | 230/400 50Hz                                  |                        |
| 15                           | Guaranteed losses   |   |   |                        |
| 15.1                         | No Load Losses at Rated Voltage and Frequency on Max. MVA Base.   | kW  |   |                        |
| 15.2                         | Load Losses at rated Current and at 75°C on max. MVA base   | kW  |   |                        |
| 15.3                         | Cooler Losses for full load operation on max. MVA base  | kW  |   |                        |
| 16                           | Impedance at Rated Current and Frequency at 75°C Winding Temperatures on ONAF, MVA Base. (Tolerance ±7.5% of the Declared Value)    | %   |   |                        |
| 16.1                         | Positive Sequence Impedance at nameplate Normal tap   | %   | 12.30-12.52%                                  |                        |



| ITEM No.2: POWER TRANSFORMER |   |      |             | Sheet 3 of 6           |
|------------------------------|---|------|-------------|------------------------|
|                              | DESCRIPTION   | UNIT | NEA REQ     | DATA to be Filled      |
|                              |   |      |             | 132/33kV,40/51.5/63MVA |
| 16.2                         | Positive Sequence at Maximum Voltage Tap (Tap 17)                                       | %    |             |                        |
| 16.3                         | Positive Sequence at Minimum Voltage Tap (Tap 1)  | %    |             |                        |
| 16.4                         | Zero Sequence at Nameplate Tap  |      |             |                        |
| 17                           | Reactance at rated current and Frequency at 75°C on Maximum MVA base at a nameplate tap |      |             |                        |
| 18                           | Efficiency at 75°C Winding Temperature at PF=0.9  |      |             |                        |
| 18.1                         | At 100% Load  | %    |             |                        |
| 18.2                         | At 75% Load   | %    |             |                        |
| 18.3                         | At 50% Load   | %    | Above 99%   |                        |
| 19                           | Load in Percentage of Full Load and Power Factor at which maximum efficiency occurs.    |      |             |                        |
| 20                           | Regulation at full Load and at 75C  |      |             |                        |
| 20.1                         | At Unity Power Factor   |      |             |                        |
| 20.2                         | At 0.85 Power Factor Lagging  |      |             |                        |
| 21                           | No Load Current in Percentage of rated Current referred to HV and 50Hz.                 |      |             |                        |
| 21.1                         | At 90% Rated Voltage  | %    |             |                        |
| 21.2                         | At 100% Rated Voltage   | %    | <1          |                        |
| 21.3                         | At 110% Rated Voltage   | %    |             |                        |
| 22                           | Clearances  |      |             |                        |
| 22.1                         | Minimum Clearances in air-HV/LV   | mm   |             |                        |
| 22.2                         | Between Phases Between Phase and Earth  | mm   |             |                        |
| 23                           | Insulation Level  |      |             |                        |
| 23.1                         | Power Frequency Withstand Voltage (1Min rms)  |      |             |                        |
| 23.1.1                       | Primary   | kV   | 275         |                        |
| 23.1.2                       | Secondary   | kV   | 70          |                        |
| 23.1.3                       | Tertiary (if Provided)  | kV   | 28          |                        |
| 23.2                         | Impulse Withstand Voltage   |      |             |                        |
| 23.2.1                       | Primary   | kV   | 650 (Crest) |                        |
| 23.2.2                       | Secondary   | kV   | 170 (Crest) |                        |
| 23.2.2                       | Tertiary(if Provided)   | kV   | 75 (Crest)  |                        |
| 24                           | Details of Oil Preservation System  |      |             |                        |





| ITEM No.2: POWER TRANSFORMER |   |                    |                  | Sheet 4 of 6           |
|------------------------------|---|--------------------|------------------|------------------------|
|                              | DESCRIPTION   | UNIT               | NEA REQ          | DATA to be Filled      |
|                              |   |                    |                  | 132/33kV,40/51.5/63MVA |
| 24.1                         | Type  |                    | Conservator Type |                        |
| 24.2                         | Details of Oil Preservation System                  |                    |                  |                        |
| 24.3                         | If Conservator Type, Urethane Air Cell provided     | Yes/No             | Yes              |                        |
| 24.4                         | Volume of Conservator                               | Cu.m               |                  |                        |
| 24.5                         | Volume of Oil Between the highest and Lowest Levels | Ltrs               |                  |                        |
| <b>24.6</b>                  | <b>Breather</b>                                     |                    |                  |                        |
| i.                           | Manufacturer and Country of origin                  |                    |                  |                        |
| ii.                          | Manufacturer's Type designation                     |                    |                  |                        |
| iii.                         | Type  |                    | Maintenance Free |                        |
| 25                           | Pressure Relief Device<br>Min. pressure setting     | kg/cm2             |                  |                        |
| 26                           | Details of Bushings HV / LV / Neutral               |                    |                  |                        |
| 26.1                         | Manufacturer / Type                                 |                    |                  |                        |
| 26.2                         | Voltage class                                       | kV                 | 145/36/12        |                        |
| 26.2                         | Creepage Distance                                   | mm                 | 25mm/kV          |                        |
| 26.3                         | Weight of Bushing                                   | kg                 |                  |                        |
| 26.4                         | Standard Reference                                  |                    | IEC              |                        |
| 26.5                         | Dry Flash over Voltage                              | kV                 | 275/70/28        |                        |
| 26.6                         | Wet Flash Over Voltage                              | kV                 | 275/70/28        |                        |
| 26.7                         | Impulse Withstand Voltage                           | kV                 | 650/170/75       |                        |
| 27                           | Insulating Oil                                      |                    |                  |                        |
| i                            | Manufacturer and Country of Origin                  |                    |                  |                        |
| ii                           | Manufacturer's type designation                     |                    |                  |                        |
| iii                          | Type  |                    | Insulating Oil   |                        |
| iv                           | Applicable standard                                 |                    |                  |                        |
| v                            | Technical Specifications                            |                    |                  |                        |
| v.1                          | Dielectric Breakdown Strength (Min) at 2.5mm gap    | kV                 | 30               |                        |
| v.2                          | Flash Point (Min)                                   | °C                 | 135              |                        |
| v.3                          | Density at 20°C (Max)                               | g/Cu.cm            | 0.895            |                        |
| v.4                          | Viscosity at 40°C (Max)                             | mm <sup>2</sup> /s | 12               |                        |
| v.5                          | Viscosity at -30°C (Max)                            | mm <sup>2</sup> /s | 1800             |                        |
| v.6                          | Acidity Neutralization Value (Max)                  | mgKOH /g           | 0.01             |                        |
| v.7                          | Sludge Value (Max)                                  |                    | 0.1%             |                        |
| v.8                          | Pour Point (Max)                                    | °C                 | -40 C            |                        |
| v.9                          | Corrosive Sulphur                                   |                    | Non-corrosive    |                        |
| v.10                         | Water Content (Max)                                 | ppm                | 40               |                        |
| v.11                         | Dielectric Dissipation factor at 90                 |                    | 0.005            |                        |



|      |   |                        |   |  |
|------|---|------------------------|---|--|
| v.12 | (Max)<br>Appearance   |                        | clean free from<br>sediment and<br>suspended matter |  |
| vi.  | PCB Content   |                        | Not Detectable                                      |  |
| vii. | Approx. volume of Oil, ltrs   |                        |   |  |
| viii | Whether First filled of Oil with<br>5% excess provided                                | Yes/No                 | Yes   |  |
| 28   | Core Material   |                        |   |  |
| 28.1 | Maximum flux density at rated<br>voltage on principal tapping and<br>rated frequency: |                        |   |  |
|      | Transformer legs  | T                      |   |  |
|      | Transformer yokes   | T                      |   |  |
| 28.2 | Maximum flux density at 110%<br>voltage   |                        |   |  |
|      | Transformer legs  | T                      | < 1.9   |  |
|      | Transformer yokes   | T                      | < 1.9   |  |
| 28.3 | Grade of core used  | Prime<br>core          |   |  |
|      | Type of Core  | CRGO                   |   |  |
|      | Thickness of core lamination  |                        |   |  |
|      | Rated Loss per kg   |                        |   |  |
| 29.1 | Maximum current density in<br>windings at rated output:                               |                        |   |  |
|      | Primary (HV)  | A/mm <sup>2</sup>      |   |  |
|      | Secondary (LV)  | A/mm <sup>2</sup>      |   |  |
|      | Weight of copper in windings:   |                        |   |  |
|      | Primary (HV)  |                        |   |  |
|      | Secondary (LV)  |                        |   |  |
| 30   | Bushing Current Transformers  |                        |   |  |
| 30.1 | Numbers of Cores<br>- HV<br>- LV<br>- Neutral   | Nos<br>Nos<br>Nos      | 1 / phase<br>1 / phase<br>1                         |  |
| 30.2 | Accuracy class / Burden/Ratio<br>- HV / HV Neutral<br>- LV / LV Neutral               |                        | PS / 15VA/300/1<br>PS / 15VA/1200/1                 |  |
| 31   | Lightning Arrestor mounted on<br>- HV<br>- LV   | Yes/No<br>Yes/No       | No<br>Yes   |  |
| 32   | RTCC Panel Details  |                        |   |  |
| 32.1 | AVR make / Model  | MR Germany, ABB Sweden |   |  |
| 32.2 | Annunciator 12 Windows<br>provided  | Yes/No                 | Yes   |  |
| 32.3 | Indicating Voltmeter  | Yes/No                 | Yes   |  |
| 32.4 | Facilities and Provision as per<br>specification provided?                            | Yes/No                 | Yes   |  |
| 33   | Approximate Overall Dimension   |                        |   |  |



|      |   |        |        |  |
|------|---|--------|--------|--|
|      | ( L x W x H )   |        |        |  |
| 34   | Approximate Weights   |        |        |  |
| 34.1 | Core and Coil   | kg     |        |  |
| 34.2 | Tank and fittings   | kg     |        |  |
| 34.3 | Oil   | kg     |        |  |
| 34.4 | Total Weight  | kg     |        |  |
| 35   | Delivery of Equipment in Months, following the Award of Contract (Allowing the time for Drawing Approval) |        | Months |  |
| 36   | Is manufacturer ISO 9001 holder?  | Yes/No | Yes    |  |
| 37   | Type test certificate submitted?  | Yes/No | Yes    |  |
| 38   | Has manufacturer exported units?  | Yes/No | Yes    |  |
| 39   | User's certificate submitted?   | Yes/No | Yes    |  |
| 40   | Technical literature / drawings submitted?  | Yes/No | Yes    |  |

Deviations from technical requirements:

Signed.....

As representative for.....

Address.....

Date.....



**ITEM No. 3: 132/11kV, 31.5/45MVA POWER TRANSFORMER**

| ITEM No.1: 132/11kV, 45MVA POWER TRANSFORMER |   |       |                                  | Sheet 1 of 6                 |
|--|---|-------|----------------------------------|------------------------------|
|  | DESCRIPTION   | UNIT  | NEA REQ                          | DATA to be Filled            |
|  |   |       |                                  | <b>132/11kV, 31.5/45 MVA</b> |
| <b>1</b>                                     | <b>Manufacturer and Country of Origin</b>                     |       |                                  |                              |
| <b>2</b>                                     | <b>Year of manufacturing experience</b>                       | Years | 10                               |                              |
|  | <b>Manufacturing's Designation as per submitted catalogue</b> |       |                                  |                              |
| <b>4</b>                                     | <b>Applicable standard</b>                                    |       | IEC                              |                              |
| <b>5</b>                                     | <b>Type</b>   |       | Outdoor, oil immersed, Core Type |                              |
| <b>6</b>                                     | <b>Winding / Phase</b>  |       | Two or Three                     |                              |
| <b>7</b>                                     | <b>Cooling</b>  |       | ONAN / ONAF                      |                              |
| <b>8</b>                                     | <b>Ratings</b>  |       |                                  |                              |
| 8.1  | Rated MVA   |       |                                  |                              |
| 8.1.1  | ONAN  | MVA   | 31.5                             |                              |
| 8.1.2  | ONAF  | MVA   | 45                               |                              |
| 8.2  | Rated Voltage   |       |                                  |                              |
| 8.2.1  | Primary   | kV    | 132                              |                              |
| 8.2.2  | Secondary   | kV    | 11                               |                              |
| 8.2.3  | Tertiary (If Provided)  | kV    | 6.6                              |                              |
| 8.3  | Maximum Voltage   |       |                                  |                              |
| 8.3.1  | Primary   | kV    | 145                              |                              |
| 8.3.2  | Secondary   | kV    | 12                               |                              |
| 8.3.3  | Tertiary (If Provided)  | kV    |                                  |                              |
| <b>8.4</b>                                   | <b>Number of Phases</b>                                       |       | Three                            |                              |
| <b>8.5</b>                                   | <b>Rated Frequency</b>  | Hz    | 50                               |                              |
| <b>9</b>                                     | <b>Noise Level</b>  |       |                                  |                              |
|  | On ONAN Rating  | dB    | <73                              |                              |
|  | On ONAF Rating Rated Voltage                                  | dB    | <75                              |                              |
| <b>10</b>                                    | <b>Temperature Rise</b>                                       |       |                                  |                              |
| 10.1   | Temperature Rise above 45°C ambient                           |       |                                  |                              |
|  | - In Oil by Thermometer                                       | °C    | 50                               |                              |
|  | - In Winding By Resistance                                    | °C    | 55                               |                              |
| 10.2   | Hottest Spot Temperature in Winding Limited to                | °C    | 55                               |                              |
| 10.3   | Temperature Indicators Make                                   |       | KHILSTROM, Sweden or Equi.       |                              |
| <b>11</b>                                    | <b>Connection</b>   |       |                                  |                              |
| 11.1   | High Voltage  |       | Star                             |                              |
| 11.2   | Low Voltage   |       | Star                             |                              |
| 11.3   | Tertiary (If Provided)  |       | Delta                            |                              |
| 11.3   | Vector Group Ref in accordance with IEC 76                    |       | YNyn0                            |                              |



| ITEM No.3: 132/11kV, 31.5/45MVA POWER TRANSFORMER |  |   |  | Sheet 2 of 6          |
|---|--|---|--|-----------------------|
|   | DESCRIPTION  | UNIT  | NEA REQ  | DATA to be Filled     |
|   |  |   |  | 132/11kV, 31.5/45 MVA |
|   | Vector Group (If Tertiary Provided)  |   | YNyn0 Dll  |                       |
| <b>12</b>   | <b>Taps</b>  |   |  |                       |
| 12.1  | Type of Tap changer  |   | OLTC   |                       |
| 12.2  | Tap Step   |   | 1.25%  |                       |
| 12.3  | Tap Range  |   | ± 10%  |                       |
| 12.4  | Nos. of Tap  |   | 17   |                       |
| <b>13</b>   | <b>Cooling Equipment (For ONAF)</b>  |   |  |                       |
| <b>13.1</b>                                       | Manufacturer/ Type   |   |  |                       |
| 13.2  | Number of Fans Connected   | Nos   |  |                       |
| 13.3  | Rated Operating Voltage, Vac   | Vac   | 230/400, 50Hz  |                       |
| 13.4  | Rated Control Voltage, V   | Vdc   | 110  |                       |
| 13.5  | Rated Power  | kW  |  |                       |
| <b>14</b>   | <b>OLTC Gear</b>   |   |  |                       |
| 14.1  | Manufacturer / Type  | MR Germany, ABB Sweden or equivalent/ Vacuum Type |  |                       |
| 14.2  | Rating<br>- Rated Voltage<br>- Rated Current<br>- Step Voltage<br>- Numbers of Steps   | kV<br>A<br>V<br>Nos                               | Suitable for<br>132kV class<br><br>17                                |                       |
| 14.3  | Control Suitable For<br>- Remote / Local Operation<br>- Auto / Manual Operation<br>- Parallel Operation<br>- Master Slave Operation  | Yes/No<br>Yes/No                                  | Remote / Local<br>Auto / Manual<br>Yes<br>Yes                        |                       |
| 14.4  | Rated voltage of Drive Motor   | Vac   | 230/400 50Hz   |                       |
| <b>15</b>   | <b>Guaranteed losses</b>   |   |  |                       |
| 15.1  | No Load Losses at Rated Voltage and Frequency on Max. MVA Base.  | kW  |  |                       |
| 15.2  | Load Losses at rated Current and at 75°C on max. MVA base  | kW  |  |                       |
| 15.3  | Cooler Losses for full load operation on max. MVA base   | kW  |  |                       |
| <b>16</b>   | <b>Impedance at Rated Current and Frequency at 75°C Winding Temperatures on ONAF, MVA Base. (Tolerance ±7.5% of the Declared Value), percentage impedance shall match with that of existing Transformer.</b> | %   | (percentage impedance shall match with that of existing transformer) |                       |
| 16.1  | Positive Sequence Impedance at nameplate Normal tap  | %   | 10.65%   |                       |



|  |  |             |                  |                              |
|--|--|-------------|------------------|------------------------------|
| 16.2   | Positive Sequence at Maximum Voltage Tap ( <b>Tap 17</b> )                                     | %           | 10.60%           |                              |
| <b>ITEM No.3: 132/11kV, 31.5/45MVA POWER TRANSFORMER</b> |  |             |                  | <b>Sheet 3 of 6</b>          |
|  | <b>DESCRIPTION</b>   | <b>UNIT</b> | <i>NEA REQ</i>   | <b>DATA to be Filled</b>     |
|  |  |             |                  | <b>132/11kV, 31.5/45 MVA</b> |
| 16.3   | Positive Sequence at Minimum Voltage Tap ( <b>Tap 1</b> )                                      | %           | 11.17%           |                              |
| 16.4   | Zero Sequence at Nameplate Tap   |             |                  |                              |
| <b>17</b>  | <b>Reactance</b> at rated current and Frequency at 75°C on Maximum MVA base at a nameplate tap |             |                  |                              |
| <b>18</b>  | <b>Efficiency at 75°C Winding Temperature at PF=0.9</b>  |             |                  |                              |
| 18.1   | At 100% Load   | %           | Above 99%        |                              |
| 18.2   | At 75% Load  | %           |                  |                              |
| 18.3   | At 50% Load  | %           |                  |                              |
| <b>19</b>  | <b>Load in Percentage</b> of Full Load and Power Factor at which maximum efficiency occurs.    |             |                  |                              |
| <b>20</b>  | <b>Regulation at full Load and at 75C</b>  |             |                  |                              |
| 20.1   | At Unity Power Factor  |             |                  |                              |
| 20.2   | At 0.85 Power Factor Lagging   |             |                  |                              |
| <b>21</b>  | <b>No Load Current in Percentage</b> of rated Current referred to HV and 50Hz.                 |             |                  |                              |
| 21.1   | At 90% Rated Voltage   | %           |                  |                              |
| 21.2   | At 100% Rated Voltage  | %           | <1               |                              |
| 21.3   | At 110% Rated Voltage  | %           |                  |                              |
| <b>22</b>  | <b>Clearances</b>  |             |                  |                              |
| 22.1   | Minimum Clearances in air-HV/LV  | mm          |                  |                              |
| 22.2   | Between Phases Between Phase and Earth   | mm          |                  |                              |
| <b>23</b>  | <b>Insulation Level</b>  |             |                  |                              |
| 23.1   | Power Frequency Withstand Voltage (1Min rms)   |             |                  |                              |
| 23.1.1   | Primary  | kV          | 275              |                              |
| 23.1.2   | Secondary  | kV          | 28               |                              |
| 23.1.3   | Tertiary (if Provided)   | kV          |                  |                              |
| <b>23.2</b>  | <b>Impulse Withstand Voltage</b>   |             |                  |                              |
| 23.2.1   | Primary  | kV          | 650(Crest)       |                              |
| 23.2.2   | Secondary  | kV          | 75(Crest)        |                              |
| 23.2.2   | Tertiary(if Provided)  | kV          |                  |                              |
| <b>24</b>  | <b>Details of Oil Preservation System</b>  |             |                  |                              |
| 24.1   | Type   |             | Conservator Type |                              |



|  |  |                               |                  |                              |
|--|--|-------------------------------|------------------|------------------------------|
| 24.2   | Details of Oil Preservation System                     |                               |                  |                              |
| 24.3   | If Conservator Type, Urethane Air Cell provided        | Yes/No                        | Yes              |                              |
| <b>ITEM No.3: 132/11kV, 31.5/45MVA POWER TRANSFORMER</b> |  |                               |                  | <b>Sheet 4 of 6</b>          |
|  | <b>DESCRIPTION</b>                                     | <b>UNIT</b>                   | <b>NEA REQ</b>   | <b>DATA to be Filled</b>     |
|  |  |                               |                  | <b>132/11kV, 31.5/45 MVA</b> |
| 24.4   | Volume of Conservator                                  | Cu.m                          |                  |                              |
| 24.5   | Volume of Oil Between the highest and Lowest Levels    | Ltrs                          |                  |                              |
| <b>24.6</b>  | <b>Breather</b>  |                               |                  |                              |
| i.   | Manufacturer and Country of origin                     |                               |                  |                              |
| ii.  | Manufacturer's Type designation                        |                               |                  |                              |
| iii.   | Type   |                               | Maintenance Free |                              |
| <b>25</b>  | <b>Pressure Relief Device</b><br>Min. pressure setting | kg/cm2                        |                  |                              |
| <b>26</b>  | <b>Details of Bushings HV / LV / Neutral</b>           |                               |                  |                              |
| 26.1   | Manufacturer / Type                                    |                               |                  |                              |
| 26.2   | Voltage class  | kV                            | 145/12           |                              |
| 26.2   | Creepage Distance                                      | mm                            | 25mm/kV          |                              |
| 26.3   | Weight of Bushing                                      | kg                            |                  |                              |
| 26.4   | Standard Reference                                     |                               | IEC              |                              |
| 26.5   | Dry Flash over Voltage                                 | kV                            | 275/28           |                              |
| 26.6   | Wet Flash Over Voltage                                 | kV                            | 275/28           |                              |
| 26.7   | Impulse Withstand Voltage                              | kV                            | 650/75           |                              |
| <b>27</b>  | <b>Insulating Oil</b>                                  |                               |                  |                              |
| <b>i</b>   | <b>Manufacturer and Country of Origin</b>              |                               |                  |                              |
| <b>ii</b>  | <b>Manufacturer's type designation</b>                 |                               |                  |                              |
| <b>iii</b>   | <b>Type</b>  |                               | Insulating Oil   |                              |
| <b>iv</b>  | <b>Applicable standard</b>                             |                               |                  |                              |
| <b>v</b>   | <b>Technical Specifications</b>                        |                               |                  |                              |
| v.1  | Dielectric Breakdown Strength (Min) at 2.5mm gap       | kV                            | 30               |                              |
| v.2  | Flash Point (Min)                                      | °C                            | 135              |                              |
| v.3  | Density at 20°C (Max)                                  | g/Cu.cm                       | 0.895            |                              |
| v.4  | Viscosity at 40°C (Max)                                |                               | 12               |                              |
| v.5  | Viscosity at -30°C (Max)                               | mm <sup>2</sup> /s            | 1800             |                              |
| v.6  | Acidity Neutralization Value (Max)                     | mm <sup>2</sup> /s<br>mgKOH/g | 0.01             |                              |
| v.7  | Sludge Value (Max)                                     |                               | 0.1%             |                              |
| v.8  | Pour Point (Max)                                       | °C                            | -40 C            |                              |
| v.9  | Corrosive Sulphur                                      |                               | Non-corrosive    |                              |
| v.10   | Water Content (Max)                                    | ppm                           | 40               |                              |
| v.11   | Dielectric Dissipation factor at 90 (Max)              |                               | 0.005            |                              |



|  |   |                          |   |                              |
|--|---|--------------------------|---|------------------------------|
| v.12   | Appearance  |                          | clean free from sediment and suspended matter |                              |
| vi.  | PCB Content   |                          | Not Detectable                                |                              |
| <b>ITEM No.3: 132/11kV, 31.5/4522.5MVA POWER TRANSFORMER</b> |   |                          |   | <b>Sheet 5 of 6</b>          |
|  | <b>DESCRIPTION</b>  | <b>UNIT</b>              | <b>NEA REQ</b>                                | <b>DATA to be Filled</b>     |
|  |   |                          |   | <b>132/11kV, 31.5/45 MVA</b> |
| vii.   | Approx. volume of Oil, ltrs   |                          |   |                              |
| viii   | Whether First filled of Oil with 5% excess provided                             | Yes/No                   | Yes   |                              |
| <b>28</b>  | <b>Core Material</b>  |                          |   |                              |
| <b>28.1</b>  | Maximum flux density at rated voltage on principal tapping and rated frequency: |                          |   |                              |
|  | Transformer legs  | T                        |   |                              |
|  | Transformer yokes   | T                        |   |                              |
| <b>28.2</b>  | Maximum flux density at 110% voltage  |                          |   |                              |
|  | Transformer legs  | T                        | < 1.9   |                              |
|  | Transformer yokes   | T                        | < 1.9   |                              |
| <b>28.3</b>  | Grade of core used  | Prime core               |   |                              |
|  | Type of Core  | CRGO                     |   |                              |
|  | Thickness of core lamination  |                          |   |                              |
|  | <b>Rated Loss per kg</b>  |                          |   |                              |
| <b>29.1</b>  | Maximum current density in windings at rated output:                            |                          |   |                              |
|  | Primary (HV)  | A/mm <sup>2</sup>        |   |                              |
|  | Secondary (LV)  | A/mm <sup>2</sup>        |   |                              |
|  | Weight of copper in windings:   |                          |   |                              |
|  | Primary (HV)  |                          |   |                              |
|  | Secondary (LV)  |                          |   |                              |
| <b>30</b>  | <b>Bushing Current Transformers</b>   |                          |   |                              |
| 30.1   | Numbers of Cores<br>- HV<br>- LV<br>- Neutral                                   | Nos<br>Nos<br>Nos        | 1 / phase<br>1 / phase<br>1                   |                              |
| 30.2   | Accuracy class / Burden/Ratio<br>- HV / HV Neutral<br>- LV / LV Neutral         |                          | PS / 15VA/200/1<br>PS/<br>15VA/2500/1         |                              |
| <b>31</b>  | <b>Lightning Arrestor mounted on</b><br>- HV<br>- LV                            | Yes/No<br>Yes/No         | No<br>Yes                                     |                              |
| <b>32</b>  | <b>RTCC Panel Details</b>   |                          |   |                              |
| 32.1   | AVR make / Model  | MR, Germany, ABB, Sweden |   |                              |
| 32.2   | Annunciator 12 Windows provided   | Yes/No                   | Yes   |                              |
| 32.3   | Indicating Voltmeter  | Yes/No                   | Yes   |                              |
| 32.4   | Facilities and Provision as per   | Yes/No                   | Yes   |                              |





|  |   |             |                |                              |
|--|---|-------------|----------------|------------------------------|
|  | specification provided?   |             |                |                              |
| <b>33</b>  | <b>Approximate Overall Dimension<br/>( L x W x H )</b>  |             |                |                              |
| <b>ITEM No.3: 132/11kV, 31.5/45MVA POWER TRANSFORMER</b> |   |             |                | <b>Sheet 6 of 6</b>          |
|  | <b>DESCRIPTION</b>  | <b>UNIT</b> | <i>NEA REQ</i> | <b>DATA to be Filled</b>     |
|  |   |             |                | <b>132/11kV, 31.5/45 MVA</b> |
| <b>34</b>  | <b>Approximate Weights</b>  |             |                |                              |
| 34.1   | Core and Coil   | kg          |                |                              |
| 34.2   | Tank and fittings   | kg          |                |                              |
| 34.3   | Oil   | kg          |                |                              |
| 34.4   | Total Weight  | kg          |                |                              |
| 35   | Delivery of Equipment in Months, following the Award of Contract (Allowing the time for Drawing Approval) |             | Months         |                              |
| 36   | Is manufacturer ISO 9001 holder?  | Yes/No      | Yes            |                              |
| 37   | Type test certificate submitted?  | Yes/No      | Yes            |                              |
| 38   | Has manufacturer exported units?  | Yes/No      | Yes            |                              |
| 39   | User's certificate submitted?   | Yes/No      | Yes            |                              |
| 40   | Technical literature / drawings submitted?  | Yes/No      | Yes            |                              |

Deviations from technical requirements:

Signed.....

As representative for.....

Address.....

Date.....



**ITEM No.4: 33/11kV, 24MVA POWER TRANSFORMER**

| ITEM No.4: 33/11kV, 24MVA POWER TRANSFORMER |   |       |                                   | Sheet 1 of 5             |
|---|---|-------|-----------------------------------|--------------------------|
|   | DESCRIPTION   | UNIT  | NEA REQ                           | DATA to be Filled        |
|   |   |       |                                   | <b>33/11kV, 20/24MVA</b> |
| <b>1</b>                                    | <b>Manufacturer and Country of Origin</b>                     |       |                                   |                          |
| <b>2</b>                                    | <b>Year of manufacturing experience</b>                       | Years | 10                                |                          |
| <b>3</b>                                    | <b>Manufacturing's Designation as per submitted catalogue</b> |       |                                   |                          |
| <b>4</b>                                    | <b>Applicable standard</b>                                    |       | IEC                               |                          |
| <b>5</b>                                    | <b>Type</b>   |       | Outdoor, oil immersed, Core Type  |                          |
| <b>6</b>                                    | <b>Winding / Phase</b>  |       | Three                             |                          |
| <b>7</b>                                    | <b>Cooling</b>  |       | ONAN / ONAF                       |                          |
| <b>8</b>                                    | <b>Ratings</b>  |       |                                   |                          |
| 8.1   | Rated MVA   |       |                                   |                          |
| 8.1.1                                       | ONAN  | MVA   | 20                                |                          |
| 8.1.2                                       | ONAF  | MVA   | 24                                |                          |
| 8.2   | Rated Voltage   |       |                                   |                          |
| 8.2.1                                       | Primary   | kV    | 33                                |                          |
| 8.2.2                                       | Secondary   | kV    | 11                                |                          |
| 8.2.3                                       | Tertiary (If Provided)  | kV    | ...                               |                          |
| 8.3   | Maximum Voltage   |       |                                   |                          |
| 8.3.1                                       | Primary   | kV    | 36                                |                          |
| 8.3.2                                       | Secondary   | kV    | 12                                |                          |
| 8.3.3                                       | Tertiary (If Provided)  | kV    | ....                              |                          |
| <b>8.4</b>                                  | <b>Number of Phases</b>                                       |       | Three                             |                          |
| <b>8.5</b>                                  | <b>Rated Frequency</b>  | Hz    | 50                                |                          |
| <b>9</b>                                    | <b>Noise Level</b>  |       |                                   |                          |
|   | On ONAN Rating  | dB    | <73                               |                          |
|   | On ONAF Rating Rated Voltage                                  | dB    | <75                               |                          |
| <b>10</b>                                   | <b>Temperature Rise</b>                                       |       |                                   |                          |
| 10.1  | Temperature Rise above 45°C ambient                           | °C    | 50                                |                          |
|   | - In Oil by Thermometer                                       | °C    | 55                                |                          |
|   | - In Winding By Resistance                                    |       |                                   |                          |
| 10.2  | Hottest Spot Temperature in Winding Limited to                | °C    | 55                                |                          |
| 10.3  | Temperature Indicators Make                                   |       | <b>KHILSTROM, Sweden or Equi.</b> |                          |
| <b>11</b>                                   | <b>Connection</b>   |       |                                   |                          |
| 11.1  | High Voltage  |       | Delta                             |                          |
| 11.2  | Low Voltage   |       | Star                              |                          |
| 11.3  | Tertiary (If Provided)  |       | ....                              |                          |



|  |   |   |  |                          |
|--|---|---|--|--------------------------|
| 11.3   | Vector Group Ref in accordance with IEC 76  |   | Dyn11  |                          |
|  | Vector Group (If Tertiary Provided)   |   |  |                          |
| <b>ITEM No.4: 33/11kV, 24MVA POWER TRANSFORMER</b> |   |   |  | <b>Sheet 2 of 5</b>      |
|  | <b>DESCRIPTION</b>  | <b>UNIT</b>                                       | <b>NEA REQ</b>   | <b>DATA to be Filled</b> |
|  |   |   |  | <b>33/11kV, 20/24MVA</b> |
| <b>12</b>  | <b>Taps</b>   |   |  |                          |
| 12.1   | Type of Tap changer   |   | OLTC   |                          |
| 12.2   | Tap Step  |   | 1.25%  |                          |
| 12.3   | Tap Range   |   | ± 10%  |                          |
| 12.4   | Nos. of Tap   |   | 17   |                          |
| <b>13</b>  | <b>Cooling Equipment (For ONAF)</b>   |   |  |                          |
| <b>13.1</b>  | Manufacturer/ Type  |   |  |                          |
| 13.2   | Number of Fans Connected  | Nos   |  |                          |
| 13.3   | Rated Operating Voltage, Vac  | Vac   | 230/400 50Hz   |                          |
| 13.4   | Rated Control Voltage, V  | Vdc   | 110  |                          |
| 13.5   | Rated Power   | KW  |  |                          |
| <b>14</b>  | <b>OLTC Gear</b>  |   |  |                          |
| 14.1   | Manufacturer / Type   | MR Germany, ABB Sweden or equivalent/ Vacuum Type |  |                          |
| 14.2   | Rating<br>- Rated Voltage<br>- Rated Current<br>- Step Voltage<br>- Numbers of Steps  | KV<br>A<br>V<br>Nos                               | Suitable for 33kV Class<br><br><br>17                                |                          |
| 14.3   | Control Suitable For<br>- Remote / Local Operation<br>- Auto / Manual Operation<br>- Parallel Operation<br>- Master Slave Operation     | Yes/No<br>Yes/No                                  | Remote / Local<br>Auto / Manual<br>Yes<br>Yes                        |                          |
| 14.4   | Rated voltage of Drive Motor  | Vac   | 230/400 50Hz   |                          |
| <b>15</b>  | <b>Guaranteed losses</b>  |   |  |                          |
| 15.1   | No Load Losses at Rated Voltage and Frequency on Max. MVA Base.   | kW  |  |                          |
| 15.2   | Load Losses at rated Current and at 75°C on max. MVA base   | kW  |  |                          |
| 15.3   | Cooler Losses for full load operation on max. MVA base  | kW  |  |                          |
| <b>16</b>  | <b>Impedance at Rated Current and Frequency at 75°C Winding Temperatures on ONAF, MVA Base. (Tolerance ±7.5% of the Declared Value)</b> | %   | (percentage impedance shall match with that of existing transformer) |                          |
| 16.1   | Positive Sequence Impedance at nameplate Normal tap   | %   | 11.94 %  |                          |
| 16.2   | Positive Sequence at Maximum Voltage Tap ( <b>Tap 17</b> )  | %   | 11.66%   |                          |
| 16.3   | Positive Sequence at Minimum Voltage Tap ( <b>Tap 1</b> )   | %   | 12.56%   |                          |



|  |   |             |                  |                          |
|--|---|-------------|------------------|--------------------------|
| 16.4   | Zero Sequence at Nameplate Tap  |             |                  |                          |
| 17   | Reactance at rated current and Frequency at 75°C on Maximum MVA base at a nameplate tap     |             |                  |                          |
| <b>ITEM No.4: 33/11kV, 24MVA POWER TRANSFORMER</b> |   |             |                  | <b>Sheet 3 of 5</b>      |
|  | <b>DESCRIPTION</b>  | <b>UNIT</b> | <b>NEA REQ</b>   | <b>DATA to be Filled</b> |
|  |   |             |                  | <b>33/11kV, 20/24MVA</b> |
| 18   | <b>Efficiency at 75°C Winding Temperature at PF=0.9</b>                                     |             |                  |                          |
| 18.1   | At 100% Load  | %           | Above 99%        |                          |
| 18.2   | At 75% Load   | %           |                  |                          |
| 18.3   | At 50% Load   | %           |                  |                          |
| 19   | <b>Load in Percentage of Full Load and Power Factor at which maximum efficiency occurs.</b> |             |                  |                          |
| 20   | <b>Regulation at full Load and at 75C</b>   |             |                  |                          |
| 20.1   | At Unity Power Factor   |             |                  |                          |
| 20.2   | At 0.85 Power Factor Lagging  |             |                  |                          |
| 21   | <b>No Load Current in Percentage of rated Current referred to HV and 50Hz.</b>              |             |                  |                          |
| 21.1   | At 90% Rated Voltage  | %           | <1               |                          |
| 21.2   | At 100% Rated Voltage   | %           |                  |                          |
| 21.3   | At 110% Rated Voltage   | %           |                  |                          |
| 22   | <b>Clearances</b>   |             |                  |                          |
| 22.1   | Minimum Clearances in air-HV/LV   | mm          |                  |                          |
| 22.2   | Between Phases Between Phase and Earth  | mm          |                  |                          |
| 23   | <b>Insulation Level</b>   |             |                  |                          |
| 23.1   | Power Frequency Withstand Voltage (1Min rms)  |             |                  |                          |
| 23.1.1   | Primary   | kV          | 70               |                          |
| 23.1.2   | Secondary   | kV          | 28               |                          |
| 23.1.3   | Tertiary (if Provided)  | kV          | ...              |                          |
| 23.2   | <b>Impulse Withstand Voltage</b>  |             |                  |                          |
| 23.2.1   | Primary   | kV          | 170 (Crest)      |                          |
| 23.2.2   | Secondary   | kV          | 75 (Crest)       |                          |
| 23.2.2   | Tertiary(if Provided)   | kV          | ....             |                          |
| 24   | <b>Details of Oil Preservation System</b>   |             |                  |                          |
| 24.1   | Type  |             | Conservator Type |                          |
| 24.2   | Details of Oil Preservation System  |             |                  |                          |
| 24.3   | If Conservator Type, Urethane Air Cell provided   | Yes/No      | Yes              |                          |
| 24.4   | Volume of Conservator   | Cu.m        |                  |                          |
| 24.5   | Volume of Oil Between the highest and Lowest Levels   | Ltrs        |                  |                          |
| 24.6   | <b>Breather</b>   |             |                  |                          |
| i.   | Manufacturer and Country of origin  |             |                  |                          |
| ii.  | Manufacturer's Type designation   |             |                  |                          |



|  |   |                    |   |                          |
|--|---|--------------------|---|--------------------------|
| iii.   | Type  |                    | Maintenance Free                              |                          |
| 26.2   | Creepage Distance   | mm                 | 25mm/kV                                       |                          |
| 26.3   | Weight of Bushing   | kg                 |   |                          |
| 26.4   | Standard Reference  |                    | IEC   |                          |
| <b>ITEM No.4: 33/11kV, 24MVA POWER TRANSFORMER</b> |   |                    |   | <b>Sheet 4 of 5</b>      |
|  | <b>DESCRIPTION</b>  | <b>UNIT</b>        | <b>NEA REQ</b>                                | <b>DATA to be Filled</b> |
|  |   |                    |   | <b>33/11kV, 20/24MVA</b> |
| 26.5   | Dry Flash over Voltage  | KV                 | 70/28   |                          |
| 26.6   | Wet Flash Over Voltage  | KV                 | 70/28   |                          |
| 26.7   | Impulse Withstand Voltage   | KV                 | 170/75  |                          |
| <b>27</b>  | <b>Insulating Oil</b>   |                    |   |                          |
| <b>i</b>   | <b>Manufacturer and Country of Origin</b>                                       |                    |   |                          |
| <b>ii</b>  | <b>Manufacturer's type designation</b>  |                    |   |                          |
| <b>iii</b>   | <b>Type</b>   |                    | Insulating Oil                                |                          |
| <b>iv</b>  | <b>Applicable standard</b>  |                    |   |                          |
| <b>v</b>   | <b>Technical Specifications</b>   |                    |   |                          |
| v.1  | Dielectric Breakdown Strength (Min) at 2.5mm gap                                | kV                 | 30  |                          |
| v.2  | Flash Point (Min)   | °C                 | 135   |                          |
| v.3  | Density at 20°C (Max)   | g/Cu.cm            | 0.895   |                          |
| v.4  | Viscosity at 40°C (Max)   | mm <sup>2</sup> /s | 12  |                          |
| v.5  | Viscosity at -30°C (Max)  | mm <sup>2</sup> /s | 1800  |                          |
| v.6  | Acidity Neutralization Value (Max)  | mgKOH/g            | 0.01  |                          |
| v.7  | Sludge Value (Max)  |                    | 0.1%  |                          |
| v.8  | Pour Point (Max)  | °C                 | -40 C   |                          |
| v.9  | Corrosive Sulphur   |                    | Non-corrosive                                 |                          |
| v.10   | Water Content (Max)   | ppm                | 40  |                          |
| v.11   | Dielectric Dissipation factor at 90 (Max)                                       |                    | 0.005   |                          |
| v.12   | Appearance  |                    | clean free from sediment and suspended matter |                          |
| vi.  | PCB Content   |                    | Not Detectable                                |                          |
| vii.   | Approx. volume of Oil, ltrs   |                    |   |                          |
| Viii   | Whether First filled of Oil with 5% excess provided                             | Yes/No             | Yes   |                          |
| <b>28</b>  | <b>Core Material</b>  |                    |   |                          |
| <b>28.1</b>  | Maximum flux density at rated voltage on principal tapping and rated frequency: |                    |   |                          |
|  | Transformer legs  | T                  |   |                          |
|  | Transformer yokes   | T                  |   |                          |
| <b>28.2</b>  | Maximum flux density at 110% voltage  |                    |   |                          |
|  | Transformer legs  | T                  | < 1.9   |                          |
|  | Transformer yokes   | T                  | < 1.9   |                          |
| <b>28.3</b>  | Grade of core used  | Prime core         |   |                          |
|  | Type of Core  | CRGO               |   |                          |



|  |   |                        |   |                          |
|--|---|------------------------|---|--------------------------|
|  | Thickness of core lamination  |                        |   |                          |
|  | Rated Loss per kg   |                        |   |                          |
| 29.1   | Maximum current density in windings at rated output:  |                        |   |                          |
| <b>ITEM No.4: 33/11kV, 24MVA POWER TRANSFORMER</b> |   |                        |   | <b>Sheet 5 of 5</b>      |
|  | <b>DESCRIPTION</b>  | <b>UNIT</b>            | <b>NEA REQ</b>                          | <b>DATA to be Filled</b> |
|  |   |                        |   | <b>33/11kV, 20/24MVA</b> |
|  | Primary (HV)  | A/mm <sup>2</sup>      |   |                          |
|  | Secondary (LV)  | A/mm <sup>2</sup>      |   |                          |
|  | Weight of copper in windings:   |                        |   |                          |
|  | Primary (HV)  |                        |   |                          |
|  | Secondary (LV)  |                        |   |                          |
| <b>30</b>  | <b>Bushing Current Transformers</b>   |                        |   |                          |
| 30.1   | Numbers of Cores<br>- HV<br>- LV<br>- Neutral   | Nos<br>Nos<br>Nos      | 1 / phase<br>1 / phase<br>1             |                          |
| 30.2   | Accuracy class / Burden/Ratio<br>- HV / HV Neutral<br>- LV / LV Neutral                                   |                        | PS / 15VA/500/1<br>PS / 15VA/<br>1500/1 |                          |
| <b>31</b>  | <b>Lightning Arrestor mounted on</b><br>- HV<br>- LV  | Yes/No<br>Yes/No       | Yes<br>Yes                              |                          |
| <b>32</b>  | <b>RTCC Panel Details</b>   |                        |   |                          |
| 32.1   | AVR make / Model  | MR Germany, ABB Sweden |   |                          |
| 32.2   | Annunciator 12 Windows provided   | Yes/No                 | Yes                                     |                          |
| 32.3   | Indicating Voltmeter  | Yes/No                 | Yes                                     |                          |
| 32.4   | Facilities and Provision as per specification provided?   | Yes/No                 | Yes                                     |                          |
| <b>33</b>  | <b>Approximate Overall Dimension (L x W x H)</b>  |                        |   |                          |
| <b>34</b>  | <b>Approximate Weights</b>  |                        |   |                          |
| 34.1   | Core and Coil   | Kg                     |   |                          |
| 34.2   | Tank and fittings   | Kg                     |   |                          |
| 34.3   | Oil   | Kg                     |   |                          |
| 34.4   | Total Weight  | Kg                     |   |                          |
| <b>35</b>  | Delivery of Equipment in Months, following the Award of Contract (Allowing the time for Drawing Approval) |                        | Months                                  |                          |
| 36   | Is manufacturer ISO 9001 holder?  | Yes/No                 | Yes                                     |                          |
| 37   | Type test certificate submitted?  | Yes/No                 | Yes                                     |                          |
| 38   | Has manufacturer exported units?  | Yes/No                 | Yes                                     |                          |
| 39   | User's certificate submitted?   | Yes/No                 | Yes                                     |                          |
| 40   | Technical literature / drawings submitted?  | Yes/No                 | Yes                                     |                          |

Deviations from technical requirements:



---

Signed.....  
As representative for.....  
  
Address.....  
Date.....



| <b>TECHNICAL DATA SHEET</b>              |   |                    |                    |                          |
|--|---|--------------------|--------------------|--------------------------|
| <b>(To Be Completed By the Tenderer)</b> |   |                    |                    |                          |
| <b>ITEM No.5: 132kV CIRCUIT BREAKER</b>  |   |                    |                    | <b>Sheet 1 of 2</b>      |
|  | <b>DESCRIPTION</b>  | <b>UNIT</b>        | <b>NEA REQ</b>     | <b>DATA to be Filled</b> |
| <b>132kV</b>                             |   |                    |                    |                          |
| <b>1</b>                                 | <b>Manufacturer and Country of Origin</b>                     |                    |                    |                          |
| <b>2</b>                                 | <b>Year of manufacturing experience</b>                       | Years              | 10                 |                          |
| <b>3</b>                                 | <b>Manufacturing's Designation as per submitted catalogue</b> |                    |                    |                          |
| <b>4</b>                                 | <b>Applicable standard</b>                                    |                    | IEC                |                          |
| <b>5</b>                                 | <b>Type</b>   |                    | SF6 Outdoor        |                          |
| <b>6</b>                                 | <b>Poles</b>  |                    | Three pole         |                          |
| <b>7</b>                                 | <b>Local and remote operations</b>                            |                    | Both Required      |                          |
| <b>8</b>                                 | <b>Rated Voltage</b>  | kV                 | 132                |                          |
| <b>9</b>                                 | <b>Rated current</b>  |                    |                    |                          |
| 9.1                                      | Continuous at 45 degree ambient                               | A                  | 1250               |                          |
| 9.2                                      | Short time for 1 sec at max. kV                               | kA                 | 25                 |                          |
| <b>10</b>                                | <b>Frequency</b>  | Hz                 | 50                 |                          |
| <b>11</b>                                | <b>Temperature rise above 45 degree C ambient</b>             |                    | As per IEC         |                          |
| 11.1                                     | Contacts  | °C                 | 65                 |                          |
| 11.2                                     | Terminals   | °C                 | 65                 |                          |
| <b>12</b>                                | <b>Rated short circuit breaking current</b>                   | <b>kA</b>          | <b>25</b>          |                          |
| <b>13</b>                                | <b>Rated short circuit making current</b>                     |                    |                    |                          |
| 13.1                                     | Peak  | kA                 | 62.5               |                          |
| <b>14</b>                                | <b>Interrupting time at 100% capacity</b>                     |                    |                    |                          |
| 14.1                                     | Maximum opening time  | mS                 | 40                 |                          |
| 14.2                                     | Total interrupting time                                       | mS                 | ≤ 60               |                          |
| <b>15</b>                                | <b>Closing time</b>   | mS                 | 100                |                          |
| <b>16</b>                                | <b>Make time</b>  | mS                 | ≤ 120              |                          |
| <b>17</b>                                | <b>Maximum capacitive current breaking capacity (rms)</b>     | A                  | 50                 |                          |
| <b>18</b>                                | <b>Insulation level</b>                                       |                    |                    |                          |
| 18.1                                     | Impulse withstand voltage (crest)                             | kV                 | 650                |                          |
| 18.2                                     | Power frequency withstand voltage                             | kV                 | 275                |                          |
| <b>19</b>                                | <b>Operating mechanism</b>                                    |                    |                    |                          |
| 19.1                                     | Type  |                    | Spring operated    |                          |
| 19.2                                     | Number of mechanism per breaker                               |                    | 1                  |                          |
| 19.3                                     | Single/three phase auto-reclosure                             |                    | 3                  |                          |
| 19.4                                     | Operating voltage of closing and tripping coil                | V DC               | 110                |                          |
| 19.5                                     | Operating voltage range<br>-Closing<br>-Tripping              | % of rated voltage | 85-110%<br>70-110% |                          |
| 19.6                                     | Closing and tripping current                                  | A                  |                    |                          |





| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |  |   |                                   |  |
|---|--|---|-----------------------------------|--|
| <b>ITEM No.5: 132kV CIRCUIT BREAKER</b>                                 |  |   | <b>Sheet 2 of 2</b>               |  |
| 19.7  | Spring charging motor rating<br>-Capacity<br>-Rated voltage  | kW<br>V                                 | 110V DC                           |  |
| 19.8  | Time required by motor to charge the spring completely   | Sec                                     | <30                               |  |
| 19.9  | Push button for local operation  | Yes/No                                  | Yes                               |  |
| 19.10   | Selection switch for local/remote control  | Yes/No                                  | Yes                               |  |
| 20  | Anti pumping device provided   | Yes/No                                  | Yes                               |  |
| 21  | Trip-free feature provided   | Yes/No                                  | Yes                               |  |
| 22  | <i>Gas density detector provided</i>   | Yes/No                                  | Yes                               |  |
| 23  | <b>Operation counter provided</b>  | Yes/No                                  | Yes                               |  |
| 24  | <b>Space heater provided for cubicle</b>   | Yes/No                                  | Yes                               |  |
| 25  | <b>Thickness of sheet steel of cubicle</b>   | mm                                      | Min 2                             |  |
| 26  | <b>Operating duty cycle</b>  |   | O - 0.3sec –<br>CO - 3min –<br>CO |  |
| 27  | <b>Number of auxiliary contacts</b>  | No.                                     | 8NO, 8NC                          |  |
| 28  | <b>Enclosure Protection</b>  |   | IP55W                             |  |
| 29  | <b>A. Number of possible operations without maintenance under:</b><br>Rated short circuit breaking current<br>Rated normal current | No<br>No                                | 10<br>2000                        |  |
| 30  | <i>Porcelain insulator</i>   |   |                                   |  |
| 30.1  | Manufacturer   |   |                                   |  |
| 30.2  | Creepage distance  | mm                                      | 3300                              |  |
| 31  | <b>Rated SF6 pressure</b>  | kgf/cm2                                 |                                   |  |
| 32  | <b>Guaranteed SF6 losses/year</b>  | kg                                      | 1% per<br>Annum                   |  |
| 33  | <b>Padlocking provision for local cubicle</b>  | Yes/No                                  | Yes                               |  |
| 34  | <b>Total weight of the circuit breaker</b>   | Kg                                      |                                   |  |
| 35  | <b>Mechanical dimension(LXWXH)</b>   | mm x mm x mm                            |                                   |  |
| 36  | <b>Delivery of equipment in months following award of contract</b>   | (Allowing time for approval of drawing) |                                   |  |
| 37  | Is manufacturer is ISO 9001 holder?  | Yes/No                                  | Yes                               |  |
| 39  | Has manufacturer exported units?   | Yes/No                                  | Yes                               |  |
| 40  | Technical literature / drawings submitted?   | Yes/No                                  | Yes                               |  |



| ITEM No.6: 33kV VACUUM CIRCUIT BREAKER |  |                          |                    | Sheet 1 of 2      |
|--|--|--------------------------|--------------------|-------------------|
|  | DESCRIPTION  | UNIT                     | NEA REQ            | DATA to be Filled |
| 1                                      | Manufacturer and Country of Origin                     |                          |                    |                   |
| 2                                      | Year of manufacturing experience                       | Years                    | 10                 |                   |
| 3                                      | Manufacturing's Designation as per submitted catalogue |                          |                    |                   |
| 4                                      | Applicable standard                                    |                          | IEC                |                   |
| 5                                      | Type   |                          | Vacuum CB Outdoor  |                   |
| 6                                      | Poles  |                          | Three pole         |                   |
| 7                                      | Local and remote operations                            |                          | Both Required      |                   |
| 8                                      | Rated Voltage  | kV                       | 33                 |                   |
| 9                                      | Rated current  |                          |                    |                   |
| 9.1                                    | Continuous at 45 degree ambient                        | A                        | 2000               |                   |
| 9.2                                    | Short time for 1 sec at max. kV                        | kA                       | 25                 |                   |
| 10                                     | Frequency  | Hz                       | 50                 |                   |
| 11                                     | Temperature rise above 45 degree C ambient             |                          | As per IEC         |                   |
| 11.1                                   | Contacts   | °C                       | 65                 |                   |
| 11.2                                   | Terminals  | °C                       | 65                 |                   |
| 12                                     | Rated short circuit breaking current                   | kA                       | 25                 |                   |
| 13                                     | Rated short circuit making current                     |                          |                    |                   |
| 13.1                                   | Peak   | kA                       | 62.5               |                   |
| 14                                     | Interrupting time at 100% capacity                     |                          |                    |                   |
| 14.1                                   | Maximum opening time                                   | mS                       | 40                 |                   |
| 14.2                                   | Total interrupting time                                | mS                       | 60                 |                   |
| 15                                     | Closing time   | mS                       | 100                |                   |
| 16                                     | Make time  | mS                       | 120                |                   |
| 17                                     | Maximum capacitive current breaking capacity (rms)     | A                        | 10                 |                   |
| 18                                     | Insulation level                                       |                          |                    |                   |
| 18.1                                   | Impulse withstand voltage(crest)                       | kV                       | 170                |                   |
| 18.2                                   | Power frequency withstand voltage                      | kV                       | 75                 |                   |
| 19                                     | <i>Vacuum Chamber</i><br>Make<br>Rating                | A                        | 2000               |                   |
| 20                                     | Operating mechanism                                    |                          |                    |                   |
| 20.1                                   | Type   |                          | Spring operated    |                   |
| 20.2                                   | Operating voltage of closing and tripping coil         | V DC                     | 110                |                   |
| 20.3                                   | Operating voltage range<br>-Closing<br>-Tripping       | % of<br>rated<br>voltage | 85-110%<br>70-110% |                   |
| 20.4                                   | Closing and tripping current                           | A                        |                    |                   |



| ITEM No.6: 33kV VACUUM CIRCUIT BREAKER |  |              | Sheet 2 of 2     |  |
|--|--|--------------|------------------|--|
| 20.5                                   | Spring charging motor rating<br>-Capacity<br>-Rated voltage / Frequency  | kW<br>V / Hz | 400 / 50 or 230V |  |
| 20.6                                   | Time required by motor to charge the spring completely   | Sec          | <30              |  |
| 20.7                                   | Push button for local operation  | Yes/No       | Yes              |  |
| 20.8                                   | Selection switch for local/remote control  | Yes/No       | Yes              |  |
| 21                                     | Anti pumping device provided   | Yes/No       | Yes              |  |
| 22                                     | Trip-free feature provided   | Yes/No       | Yes              |  |
| 23                                     | Operation counter provided   | Yes/No       | Yes              |  |
| 24                                     | Space heater provided for cubicle  | Yes/No       | Yes              |  |
| 25                                     | Thickness of sheet steel of cubicle  | mm           | Min 2            |  |
| 26                                     | Operating duty cycle   |              | O - 15 – CO      |  |
| 27                                     | Number of auxiliary contacts   | No.          | 8NO, 8NC         |  |
| 28                                     | Enclosure Protection   |              | IP55W            |  |
| 29                                     | Number of possible operations without maintenance under:<br>Rated short circuit breaking current<br>Rated normal current | No.<br>No    | 10<br>5000       |  |
| 30                                     | <i>Porcelain insulator</i>   |              |                  |  |
| 30.1                                   | Manufacturer   |              |                  |  |
| 30.2                                   | Creepage distance  | mm           | 825              |  |
| 31                                     | Padlocking provision for cubicle   | Yes/No       | Yes              |  |
| 32                                     | Total weight of the circuit breaker  | Kg           |                  |  |
| 33                                     | Mechanical dimension(LXWXH)  | mm x mm x mm |                  |  |
| 34                                     | Delivery of equipment in months following award of contract (Allowing time for approval of drawing)                      |              |                  |  |
| 35                                     | Is manufacturer is ISO 9001 holder?  | Yes/No       | Yes              |  |
| 36                                     | ISO 9001 certificate submitted?  | Yes/No       | Yes              |  |
| 37                                     | Has manufacturer exported units?   | Yes/No       | Yes              |  |

Deviations from technical requirements:

Signed.....

As representative for.....

Address.....

Date.....



**ITEM No. 7: 132kV CURRENT TRANSFORMER**

| <b>TECHNICAL DATA SHEET</b><br>(To Be Completed By the Tenderer) |  |                 |  |                          |
|--|--|-----------------|--|--------------------------|
| <b>ITEM No.7: 132kV CURRENT TRANSFORMER</b>                      |  |                 | <b>Sheet 1 of 1</b>  |                          |
|  | <b>DESCRIPTION</b>   | <b>UNIT</b>     | <b>NEA REQ</b>   | <b>DATA to be Filled</b> |
|  |  |                 | <b>132kV</b>   | <b>132kV</b>             |
| 1.   | <b>Manufacturer and Country of Origin</b>  |                 |  |                          |
| 2.   | <b>Year of manufacturing experience</b>  | Years           | 10   |                          |
| 3.   | <b>Manufacturing's Designation as per submitted catalogue</b>  |                 |  |                          |
| 4.   | <b>Applicable standard</b>   |                 | IEC  |                          |
| 5.   | <b>Type</b>  |                 | Outdoor, Oil immersed  |                          |
| 6.   | <b>Number of phases</b>  | No.             | 1  |                          |
| 7.   | <b>Number of cores in each CT</b>  | NO.             | 5  |                          |
| 8.   | <b>Frequency</b>   | Hz              | 50   |                          |
| 9.   | <b>Rated Primary Voltage</b>   |                 |  |                          |
| 9.1  | Nominal  | kV              | 132  |                          |
| 9.2  | Maximum  | kV              | 145  |                          |
| 10.  | <b>Temperature</b> rise above 45 degree C ambient at normal rated current  | °C              |  |                          |
| 11.  | <b>Insulation level</b>  |                 |  |                          |
| 11.1   | Impulse withstand voltage(peak)  | kV              | 650  |                          |
| 11.2.  | Power frequency withstand voltage (1min, rms)  | kV              | 275  |                          |
| 12.  | <b>Creepage distance</b>   | mm              | 3300   |                          |
| 13.  | <b>Short time thermal rating</b>   | kA              | 25   |                          |
| 14.  | <b>Rated Peak Shortcircuit Current</b>   | kA              | 62.5   |                          |
| 15.  | <b>Rated VA burden for each core</b>   | VA              | 30   |                          |
| 16.  | <b>Accuracy class</b>  |                 | 5P20 for protection<br>0.5 for metering<br>PS for diff / Bus |                          |
| 17.  | <b>Current Ratio</b><br><b>Core-1, Transformer Diff. Prot. / Distance</b><br><b>Core-2, Backup Prot.</b><br><b>Core-3, Metering</b><br><b>Core-4, 5, Bus Diff. Prot.</b> | A               | As per Technical Data in specification                       |                          |
| 19.  | <b>Overvoltage factor</b>  |                 | 1.1  |                          |
| 20.  | Dimension(LXWXH)   | mm <sup>3</sup> |  |                          |
| 21.  | Weight   | kg              |  |                          |
| 22.  | Delivery of equipment in months following award of contract (Allowing time for approval of drawing)  | month           |  |                          |
| 24.  | Has manufacturer exported units?   | Yes/No          | Yes  |                          |
| 25.  | Technical literature/drawings submitted?   | Yes/No          | Yes  |                          |



### ITEM No. 8: 33kV CURRENT TRANSFORMER

| DESCRIPTION   | UNIT           | REQUIREMENT   | OFFERED DATA |
|---|----------------|---|--------------|
| 1. Manufacturer and Country of Origin   |                |   |              |
| 2. Years of manufacturing experience  | Years          | 10  |              |
| 3. Manufacturer's designation as per submitted catalogue / Model No.                                      |                | To be furnished   |              |
| 4. Applicable standard  |                | IEC   |              |
| 5. Type   |                | Oil Insulated Type  |              |
| 6. Number of phases   | No.            | single  |              |
| 7. Number of cores in each CT   | No.            | 3   |              |
| 8. Frequency  | Hz             | 50  |              |
| 9. Rated Primary Voltage  | kV             | 33  |              |
| 10. Temperature rise above 40 degree C ambient  | <sup>0</sup> C |   |              |
| 11. Insulation level  |                |   |              |
| a) Impulse withstand voltage  | kV,(crest)     | 170   |              |
| b) Power frequency withstand voltage (1 min. rms)   | kV             | 75  |              |
| 12. Rated peak withstand current  | kA             | 62.5  |              |
| 13. Creepage distance   | mm             | 825   |              |
| 14. Short time thermal rating (1 Sec)   | kA             | 25  |              |
| 15. Ratings   |                |   |              |
| 16. Current ratio   | A              | As per Technical Data in specification                          |              |
| 17. Rated VA burden for each core   | VA             | 30  |              |
| 18. Accuracy class  |                | 5P20 for protection,<br>0.5 for metering<br>PS for Differential |              |
| 19. Dimension (L x W x H )  | mm             |   |              |
| 20. Weight  | kg             |   |              |
| 24. Delivery of equipment in months following award of contract (Allowing time for approval of drawings.) | month          |   |              |

Deviations from technical requirements:

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| TECHNICAL DATA SHEET<br>(To Be Completed By the Tenderer) |  |  |                   |
|---|--|--|-------------------|
| ITEM No.9: 33KV POTENTIAL TRANSFORMER                     |  |  | Sheet 1 of 1      |
|   | DESCRIPTION  | NEA REQ                                    | DATA to be Filled |
| 1   | Manufacturer and Country of Origin   |  |                   |
| 2   | Years of manufacturing experience(Years)   | 10   |                   |
| 3   | Manufacturer's designation as per submitted catalogue / Model No.                                      | To be furnished                            |                   |
| 4   | Applicable standard  | IEC  |                   |
| 5   | Type   | Outdoor Oil immersed                       |                   |
| 6   | Frequency, HZ  | 50   |                   |
| 7   | Rated Primary Voltage, KV  | 33   |                   |
| 8   | Insulation level   |  |                   |
|   | a) Impulse withstand voltage, KV(crest)  | 170  |                   |
|   | b) Power frequency withstand voltage (1 min. rms),KV   | 75   |                   |
| 9   | Creepage distance, mm  | 850  |                   |
| 10  | Ratings  |  |                   |
|   | a)Voltage ratio kV   | 33/ $\sqrt{3}/0.11/\sqrt{3}/0.11/\sqrt{3}$ |                   |
|   | b)Rated Burden VA  | 50   |                   |
|   | c)Accuracy class   | 3P&0.5 for metering                        |                   |
|   | d)Overvoltage factor   |  |                   |
|   | continuous   | 1.1  |                   |
|   | 30seconds  | 1.5  |                   |
|   | e)Connection   |  |                   |
|   | f)Secondary fuse   |  |                   |
|   | Type   |  |                   |
|   | Manufacture  |  |                   |
|   | Amp rating, A  |  |                   |
|   | g)Power factor   | 0.85                                       |                   |
|   | h)Number of secondary windings   | 2  |                   |
| 11  | Knife switch and fuse on secondary provided  | Yes/No                                     |                   |
| 12  | Dimension(LxWxH) mm  |  |                   |
| 13  | Weight kg  |  |                   |
| 14  | Delivery of equipment in months following award of contract(allowing time forapproval of drawing)month | 6  |                   |

Deviations from technical requirements

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| ITEM No.10: 11KV CURRENT TRANSFORMER |   |      |  | Sheet 1 of 1      |
|--------------------------------------|---|------|--|-------------------|
|                                      | DESCRIPTION   | UNIT | NEA REQ.   | DATA to be Filled |
| 1                                    | Manufacturer  |      |  |                   |
| 2                                    | Type  |      | Cubicle mounted, epoxy resin                             |                   |
| 3                                    | Manufacturing's Designation as per submitted catalogue /Model No.   |      | To be furnished  |                   |
| 4                                    | Rated Voltage   | kV   | 12   |                   |
| 5                                    | Frequency   | Hz   | 50   |                   |
| 6                                    | Reference standard  |      | IEC  |                   |
| 7.1                                  | - For Incomer, Buscoupler<br>- Nos. of Core<br>- Ratio / Class / Burden<br>- Metering<br>- Protection<br>- Differential |      | 3<br>1000-2000/1A<br>0.5, 30VA<br>5P20, 30VA<br>PS, 30VA |                   |
| 8                                    | Insulation level  |      |  |                   |
|                                      | a. Impulse Withstand Voltage  | kV   | 75   |                   |
|                                      | b. Power frequency withstand Voltage  | kV   | 28   |                   |

Deviations from technical requirements:

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Date.....



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |  |       |   |                     |
|---|--|-------|---|---------------------|
| <b>ITEM No.11: 132kV DISCONNECTING SWITCH</b>                           |  |       |   | <b>Sheet 1 of 3</b> |
|   | DESCRIPTION  | UNIT  | NEA REQ                                     | DATA to be Filled   |
|   |  |       | 132kV                                       | 132kV               |
| 1   | Manufacturer and Country of Origin                                 |       |   |                     |
| 2   | Year of manufacturing experience                                   | Years | 10  |                     |
| 3   | Manufacturer's Designation as per submitted catalogue              |       |   |                     |
| 4   | Applicable standard  |       | IEC   |                     |
| 5   | Type   |       | 3 pole, Single throw, Outdoor, Center break |                     |
| 6   | Frequency  | Hz    | 50  |                     |
| 7   | Rated Voltage  |       |   |                     |
| 7.1   | Nominal  | kV    | 132   |                     |
| 7.2   | Maximum  | kV    | 145   |                     |
| 8   | Rated current  |       |   |                     |
| 8.1   | Continuous at 45°C ambient   | A     | 1250  |                     |
| 8.2   | Short time for 1 sec at max. kV                                    | kA    | 25  |                     |
| 8.3   | Peak short time current  | kA    |   |                     |
| 9   | Temperature rise above 45 degree C ambient at normal rated current |       | As per IEC                                  |                     |
| 9.1   | Contacts   | °C    |   |                     |
| 9.2   | Current carrying parts   | °C    |   |                     |
| 10  | Maximum current the switch can safely interrupt                    |       |   |                     |
| 10.1  | Bus/line charging current  | A     | 0.5 min                                     |                     |
| 10.2  | Potential transformer magnetizing current                          | A     | 0.5 min                                     |                     |
| 11  | Clearance  |       |   |                     |
| 11.1  | Between live part and ground                                       | mm    |   |                     |
| 11.2  | Between fixed contact and blade in open position                   | mm    | 3300  |                     |
| 12  | Insulation level   |       |   |                     |
| 12.1  | Impulse withstand voltage(peak)                                    | kV    | 650   |                     |
| 12.2  | Power frequency withstand voltage (1min, rms)                      | kV    | 275   |                     |
| 13  | Main contacts  |       |   |                     |
|   | - Material of fixed contacts                                       |       | copper alloy                                |                     |
|   | - Coating of fixed contacts  |       | Silver plated                               |                     |
|   | - Material of moving contacts                                      |       | copper alloy                                |                     |
|   | - Coating of moving contacts                                       |       | Silver plated                               |                     |
|   | - Material of the contacts of the earthing switch                  |       | copper alloy                                |                     |
|   | - Coating of the contacts of the earthing switch                   |       | Silver Alloy                                |                     |





| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |  |                      |                                       |                     |
|---|--|----------------------|---------------------------------------|---------------------|
| <b>ITEM No.11: 132kV DISCONNECTING SWITCH</b>                           |  |                      |                                       | <b>Sheet 2 of 3</b> |
|   | DESCRIPTION  | UNIT                 | NEA REQ                               | DATA to be Filled   |
|   |  |                      | 132kV                                 | 132kV               |
| <b>14</b>   | <b>Material of terminals</b>   |                      |                                       |                     |
| 14.1  | Coating of terminals   |                      |                                       |                     |
| 15  | Operating mechanism  |                      | Motor and manual operated             |                     |
| <b>16</b>   | <b>Auxiliary contacts</b>  |                      |                                       |                     |
| 16.1  | Type   | Convertible or fixed | Convertible                           |                     |
| 16.2  | Continuous current at 110V DC  | A                    | 10                                    |                     |
| 16.3  | Material   |                      | Copper                                |                     |
| 16.4  | Contacts silver plated   | Yes/No               | Yes                                   |                     |
| <b>17</b>   | <b>No. of operations switch can withstand without deterioration of contacts</b>                                  | No.                  | 1000                                  |                     |
| <b>19</b>   | <b>Auxiliary power supply</b>  |                      |                                       |                     |
| 19.1  | Space heater and cubicle   | V/phase              | 230V/phase                            |                     |
| 19.2  | Control circuit  | V, DC                | 110V DC                               |                     |
| 19.3  | Operating motor  | V, phase             | 400/230V AC                           |                     |
| <b>20</b>   | <b>Local operator provided</b>   | Yes/No               | Yes                                   |                     |
| <b>21</b>   | <b>Insulator</b>   |                      |                                       |                     |
| 21.1  | Manufacturer   |                      |                                       |                     |
| 21.2  | Type   |                      | Single stack post type                |                     |
| 21.3  | Creepage Distance in Air   | mm                   | 3300                                  |                     |
| 21.4  | Tensile Strength   |                      |                                       |                     |
| 21.5  | Cantilever Strength  |                      |                                       |                     |
| <b>22</b>   | <b>Number of N.C. contacts</b>   | No.                  | 8 min                                 |                     |
| <b>23</b>   | <b>Number of N.O. contacts</b>   | No.                  | 8 min                                 |                     |
| <b>24</b>   | <b>Enclosure protection</b><br>Material / Thickness of sheet   | mm                   | IP-55w<br>Steel / 2<br>Aluminum / > 3 |                     |
| <b>25</b>   | <b>Operating mechanism</b>   |                      | Motor & Manual Operated               |                     |
| <b>26</b>   | <b>Types of interlocks furnished</b>   |                      | Electrical and manual                 |                     |
| <b>27</b>   | <b>Earthing Switch</b>   |                      |                                       |                     |
| 27.1  | Operating Mechanism  |                      | Manual Operated                       |                     |
| 27.2  | Type of Interlocks   |                      | Electrical and manual                 |                     |
| <b>22</b>   | <b>Number of N.C. contacts</b>   | No.                  | 8                                     |                     |
| <b>23</b>   | <b>Number of N.O. contacts</b>   | No.                  | 8                                     |                     |
| <b>27</b>   | <b>Weight of Isolator</b>  | Kg                   |                                       |                     |
| <b>28</b>   | <b>Dimension (L x B x H)</b>   |                      |                                       |                     |
| <b>29</b>   | <b>Delivery of equipment in months</b><br>following award of contract<br>(Allowing time for approval of drawing) | Month                |                                       |                     |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |  |             |                |                          |
|---|--|-------------|----------------|--------------------------|
| <b>ITEM No.11: 132kV DISCONNECTING SWITCH</b>                           |  |             |                | <b>Sheet 3 of 3</b>      |
|   | <b>DESCRIPTION</b>                         | <b>UNIT</b> | <b>NEA REQ</b> | <b>DATA to be Filled</b> |
|   |  |             | <b>132kV</b>   | <b>132kV</b>             |
| 30  | ISO 9001 certificate submitted?            | Yes/No      | Yes            |                          |
| 31  | Has manufacturer exported units?           | Yes/No      | Yes            |                          |
| 32.   | Technical literature / drawings submitted? | Yes/No      | Yes            |                          |

Deviations from technical requirements:

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| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |  |       |                               |                     |
|---|--|-------|-------------------------------|---------------------|
| <b>ITEM No.12: 33 kV DISCONNECTING SWITCH</b>                           |  |       |                               | <b>Sheet 1 of 4</b> |
|   | DESCRIPTION  | UNIT  | NEA REQ                       | DATA to be Filled   |
| 1   | Manufacturer and Country of Origin                                 |       |                               |                     |
| 2   | Year of manufacturing experience                                   | Years | 10                            |                     |
| 3   | Manufacturer's Designation as per submitted catalogue              |       |                               |                     |
| 4   | Applicable standard  |       | IEC                           |                     |
| 5   | Type   |       | 3 pole, Outdoor, Center break |                     |
| 6   | Frequency  | Hz    | 50                            |                     |
| 7   | Rated Voltage  |       |                               |                     |
| 7.1   | Nominal  | kV    | 33                            |                     |
| 7.2   | Maximum  | kV    | 36                            |                     |
| 8   | Rated current  |       |                               |                     |
| 8.1   | Continuous at 45°C ambient   | A     | 2000                          |                     |
| 8.2   | Short time for 1 sec at max. kV                                    | kA    | 25                            |                     |
| 8.3   | Peak short time current  | kA    |                               |                     |
| 9   | Temperature rise above 45 degree C ambient at normal rated current |       | As per IEC                    |                     |
| 9.1   | Contacts   | °C    |                               |                     |
| 9.2   | Current carrying parts   | °C    |                               |                     |
| 10  | Maximum current the switch can safely interrupt                    |       |                               |                     |
| 10.1  | Bus/line charging current  | A     | 0.5 min                       |                     |
| 10.2  | Potential transformer magnetizing current                          | A     | 0.5 min                       |                     |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |   |                      |                           |                     |
|---|---|----------------------|---------------------------|---------------------|
| <b>ITEM No.12: 33 kV DISCONNECTING SWITCH</b>                           |   |                      |                           | <b>Sheet 2 of 4</b> |
| <b>11</b>   | <b>Clearance</b>                                  |                      |                           |                     |
| 11.1  | Between live part and ground                      | mm                   |                           |                     |
| 11.2  | Between fixed contact and blade in open position  | mm                   | 1650                      |                     |
| <b>12</b>   | <b>Insulation level</b>                           |                      |                           |                     |
| 12.1  | Impulse withstand voltage(peak)                   | kV                   | 325                       |                     |
| 12.2  | Power frequency withstand voltage<br>(1min, rms)  | kV                   | 140                       |                     |
| <b>13</b>   | <b>Main contacts</b>                              |                      |                           |                     |
|   | - Material of fixed contacts                      |                      | copper alloy              |                     |
|   | - Coating of fixed contacts                       |                      | Silver plated             |                     |
|   | - Material of moving contacts                     |                      | copper alloy              |                     |
|   | - Coating of moving contacts                      |                      | Silver plated             |                     |
|   | - Material of the contacts of the earthing switch |                      | copper alloy              |                     |
|   | - Coating of the contacts of the earthing switch  |                      | Silver Alloy              |                     |
| <b>14</b>   | <b>Material of terminals</b>                      |                      |                           |                     |
| 14.1  | Coating of terminals                              |                      |                           |                     |
| 15  | Operating mechanism                               |                      | Motor and manual operated |                     |
| <b>16</b>   | <b>Auxiliary contacts</b>                         |                      |                           |                     |
| 16.1  | Type  | Convertible or fixed | Convertible               |                     |
| 16.2  | Continuous current at 110V DC                     | A                    | 10                        |                     |
| 16.3  | Material  |                      | Copper                    |                     |
| 16.4  | Contacts silver plated                            | Yes/No               | Yes                       |                     |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |                                      |          |                             |                     |
|---|--------------------------------------|----------|-----------------------------|---------------------|
| <b>ITEM No.12: 33 kV DISCONNECTING SWITCH</b>                           |                                      |          |                             | <b>Sheet 3 of 4</b> |
| <b>19</b>   | <b>Auxiliary power supply</b>        |          |                             |                     |
| 19.1  | Space heater and cubicle             | V/phase  | 230v/phase                  |                     |
| 19.2  | Control circuit                      | V, DC    | 110V DC                     |                     |
| 19.3  | Operating motor                      | V, phase | 230/400 V, 50 Hz            |                     |
| <b>20</b>   | <b>Local operator provided</b>       | Yes/No   | Yes                         |                     |
| 21.1  | Manufacturer                         |          |                             |                     |
| 21.2  | Type                                 |          | Single stack post type      |                     |
| 21.3  | Creepage Distance in Air             | mm       | 1650                        |                     |
| 21.4  | Tensile Strength                     |          |                             |                     |
| 21.5  | Cantilever Strength                  |          |                             |                     |
| <b>22</b>   | <b>Number of N.C. contacts</b>       | No.      | 8 min                       |                     |
| <b>23</b>   | <b>Number of N.O. contacts</b>       | No.      | 8 min                       |                     |
| <b>24</b>   | <b>Enclosure protection</b>          |          | IP-55w                      |                     |
|   | Material / Thickness of sheet        | mm       | Steel / 2<br>Aluminum / > 3 |                     |
| <b>25</b>   | <b>Operating mechanism</b>           |          | Motor & Manual Operated     |                     |
| <b>26</b>   | <b>Types of interlocks furnished</b> |          | Electrical and manual       |                     |
| <b>27</b>   | <b>Earthing Switch</b>               |          |                             |                     |
| 27.1  | Operating Mechanism                  |          | Manual Operated             |                     |
| 27.2  | Type of Interlocks                   |          | Electrical and manual       |                     |
| <b>22</b>   | <b>Number of N.C. contacts</b>       | No.      | 8                           |                     |
| <b>23</b>   | <b>Number of N.O. contacts</b>       | No.      | 8                           |                     |
| <b>27</b>   | <b>Weight of Isolator</b>            | Kg       |                             |                     |
| <b>28</b>   | <b>Dimension (L x B x H</b>          |          |                             |                     |
|   |                                      |          |                             |                     |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |  |        |     |                     |
|---|--|--------|-----|---------------------|
| <b>ITEM No.12: 33 kV DISCONNECTING SWITCH</b>                           |  |        |     | <b>Sheet 4 of 4</b> |
| 29  | <b>Delivery of equipment in months</b><br>following award of contract<br><br>(Allowing time for approval of drawing) | Month  |     |                     |
| 30  | ISO 9001 certificate submitted?  | Yes/No | Yes |                     |
| 31  | Has manufacturer exported units?   | Yes/No | Yes |                     |
| 32.   | Technical literature/drawings submitted?   | Yes/No | Yes |                     |

Deviations from technical requirements:

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| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b><br><b>ITEM No.13: 132/33 kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b> |  |                   |                     |         |                   |
|---|--|-------------------|---------------------|---------|-------------------|
| DESCRIPTION   |  |                   | UNIT                | NEA REQ | DATA to be Filled |
| <b>1</b>  | <b>CONTROL AND RELAY PANEL TYPE Duplex</b>                       |                   |                     |         |                   |
| 1.1   | Manufacturer and Country of Origin                               |                   |                     |         |                   |
| 1.2   | Year of manufacturing experience                                 | Years             | 10                  |         |                   |
| 1.3   | Manufacturing's Designation as per submitted catalogue           |                   |                     |         |                   |
| <b>2</b>  | <b>CONTROL DISCREPANCY SWITCHES</b>                              |                   |                     |         |                   |
| 2.1   | Manufacturer and Country of Origin                               |                   |                     |         |                   |
| 2.2   | Type   |                   | Discrepancy         |         |                   |
| 2.3   | Current Rating   | A                 |                     |         |                   |
| 2.3   | Catalogue furnished  | Yes/No            | Yes                 |         |                   |
| <b>3</b>  | <b>PUSH BUTTON</b>   |                   |                     |         |                   |
| 3.1   | Manufacturer and Country of Origin                               |                   |                     |         |                   |
| 3.2   | Type   |                   |                     |         |                   |
| 3.3   | Contact Rating, continuous<br>Making Current<br>Breaking Current | Amp<br>Amp<br>Amp |                     |         |                   |
| 3.3   | Catalogue furnished  | Yes/No            | Yes                 |         |                   |
| <b>4</b>  | <b>INDICATING LAMPS</b>  |                   |                     |         |                   |
| 4.1   | Manufacturer   |                   |                     |         |                   |
| 4.2   | Voltage Rating   | V                 |                     |         |                   |
| 4.3   | Wattage  | W                 |                     |         |                   |
| <b>5</b>  | <b>INDICATING INSTRUMENTS</b>                                    |                   |                     |         |                   |
| <b>5.1</b>  | <b>Ammeter</b>   |                   |                     |         |                   |
| i.  | Manufacturer and Country of Origin                               |                   |                     |         |                   |
| ii.   | Type   |                   | Digital             |         |                   |
| iv.   | Accuracy class   |                   | 0.5                 |         |                   |
| <b>v.</b>   | <b>Scale</b>   |                   |                     |         |                   |
|   | -Type of scale   |                   | Center zero         |         |                   |
|   | -Range of indication<br>(...../1 Amp CT operated)                | A                 | 100-50-0-50-<br>100 |         |                   |
|   | -Overload range  | %                 | 1.5                 |         |                   |
| vi.   | VA Burden  |                   |                     |         |                   |
| vi.   | Transducer operated  | Yes/No            | Yes                 |         |                   |
| <b>5.2</b>  | <b>Apparent Power Meter (VAr)</b>                                |                   |                     |         |                   |
| i.  | Manufacturer and Country of Origin                               |                   |                     |         |                   |
| ii  | Type   |                   | Digital             |         |                   |
| iii   | Rated voltage  | kV                | 132/√3 :<br>0.11/√3 |         |                   |
| iv  | Rated current  | A                 | ...../1             |         |                   |
| vi  | Accuracy class   |                   | 0.5                 |         |                   |
| vii   | Scale  |                   | Centre zero         |         |                   |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b><br><b>ITEM No.13:132/33kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b> |   |        |                          |                   |
|---|---|--------|--------------------------|-------------------|
|   |   |        |                          | Sheet 2 of 7      |
|   | DESCRIPTION   | UNIT   | NEA REQ                  | DATA to be Filled |
|   | -Range of indication  | MVA    | 100-50-0-50-100          |                   |
| viii.   | VA Burden<br>Current Coil<br>Voltage Coil                       |        |                          |                   |
| x   | Transducer operated   | Yes/No | Yes                      |                   |
| <b>5.3</b>  | <b>KWh Meter</b>  |        |                          |                   |
| i.  | Manufacturer and Country of Origin                              |        |                          |                   |
| ii.   | Type  |        | Digital, 3-phase, 4 wire |                   |
| iii.  | Applicable standard   | IEC    | IEC                      |                   |
| iv.   | Accuracy class  |        | 0.2                      |                   |
| v.  | Import and Export meter provided                                | Yes/No | Yes                      |                   |
| vi.   | Rated voltage   | kV     | 132/√3 :<br>0.11/√3      |                   |
| vii.  | Rated current   | A      | ...../1                  |                   |
| viii.   | Operating current range   | A      | 1-10A                    |                   |
| ix.   | Operating Voltage range   | A      | 0-480V                   |                   |
| x.  | VA Burden<br>Current Coil<br>Voltage Coil                       | VA     |                          |                   |
| xi.   | Impulse contact provided  | Yes/No | Yes                      |                   |
| xii.  | Programmable at Site  |        | Yes                      |                   |
| xiii.   | Software and optical probe provided as per Price schedule & BOQ |        | Yes                      |                   |
| <b>5.4</b>  | <b>Wattmeter, MW Meter</b>                                      |        |                          |                   |
| i.  | Manufacturer and Country of Origin                              |        |                          |                   |
| ii.   | Type  |        | Digital                  |                   |
| iii.  | Accuracy class  |        | 0.5                      |                   |
| iii   | Rated voltage   | kV     | 132/√3 :<br>0.11/√3      |                   |
| iv  | Rated current   | A      | ...../1                  |                   |
|   | -Range of indication  | MW     | 20-10-0-10-20            |                   |
| <b>5.5</b>  | <b>Annunciators</b>   |        |                          |                   |
| I   | Manufacturer and Country of Origin                              |        |                          |                   |
| ii.   | Type  |        |                          |                   |
| iii.  | Manufacturer's type designation                                 |        |                          |                   |
| iv.   | Catalogue furnished   | Yes/No | Yes                      |                   |
| vi.   | Number of active points   | No.    | 24                       |                   |
| vii.  | Number of rows  | No.    | 4                        |                   |
| viii.   | Number of column  | No.    | 6                        |                   |
| ix.   | Type of mounting  |        | Flush                    |                   |





**TECHNICAL DATA SHEET**  
(To Be Completed By the Tenderer)

**ITEM No.13:132/33 kV CONTROL AND RELAY PANEL FOR TRANSFORMER**

**Sheet 3 of 7**

|            | DESCRIPTION   | UNIT                            | NEA REQ                         | DATA to be Filled |
|------------|---|---------------------------------|---------------------------------|-------------------|
| x.         | Replacement of individual inscription plates and lamps from front panel possible          | Yes/No                          | Yes                             |                   |
| xi.        | Sequence of operation as per specification  | Yes/No                          | Yes                             |                   |
| <b>5.6</b> | <b>RTCC Facility</b>  |                                 |                                 |                   |
| i.         | RTCC Facility in the Panel Provided   | Yes/No                          | Yes                             |                   |
| ii.        | Manufacturer and Country of Origin of AVR   |                                 | Shortlisted                     |                   |
| iii.       | Type  |                                 |                                 |                   |
| iv.        | Manufacturer's type designation   |                                 |                                 |                   |
| iv.        | Catalogue furnished   | Yes/No                          | Yes                             |                   |
| <b>5.5</b> | <b>Annunciators</b>   |                                 |                                 |                   |
| I          | Manufacturer and Country of Origin  |                                 |                                 |                   |
| ii.        | Type  |                                 |                                 |                   |
| iii.       | Manufacturer's type designation   |                                 |                                 |                   |
| iv.        | Catalogue furnished   | Yes/No                          | Yes                             |                   |
| vi.        | Number of active points   | No.                             | 24                              |                   |
| vii.       | Number of rows  | No.                             | 4                               |                   |
| <b>6</b>   | <b>PROTECTIVE RELAYS</b>  |                                 |                                 |                   |
| <b>6.1</b> | <b>PHASE OVERCURRENT RELAYS</b>   |                                 |                                 |                   |
| i.         | Manufacturer and Country of Origin  |                                 |                                 |                   |
| ii.        | Type  |                                 | Numerical<br>Non<br>Directional |                   |
| iii.       | Manufacturer's type designation   |                                 |                                 |                   |
| iv.        | Applicable standard   | IEC                             | IEC                             |                   |
| v.         | Triple pole or single pole  |                                 | Triple Pole                     |                   |
| vi.        | Current setting range   | % of rated<br>current           | 20-200%                         |                   |
| vii.       | Operating time at 10 times current setting  | sec                             | 3                               |                   |
| viii.      | Reset time  | mS                              |                                 |                   |
| ix.        | Characteristics   |                                 | IDMT(standa<br>rd inverse)      |                   |
| x.         | Instantaneous unit provided<br>-Current setting range<br>-Operating range<br>-NO Contacts | Yes/No<br>% of rated<br>current | Yes<br>500-2000%                |                   |
| xi.        | Insulating test according to IEC  | Yes/No                          |                                 |                   |
| xii.       | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                | Yes/No<br>Yes/No                |                                 |                   |
| xiii.      | Auxiliary DC Supply   | V <sub>dc</sub>                 | 110                             |                   |
| xiv.       | Technical literature submitted  | Yes/No                          | Yes                             |                   |



## TECHNICAL DATA SHEET

(To Be Completed By the Tenderer)

### ITEM No.13:132/33 kV CONTROL AND RELAY PANEL FOR TRANSFORMER

Sheet 4 of 7

|            | DESCRIPTION  | UNIT                                | NEA REQ                        | DATA to be Filled |
|------------|--|-------------------------------------|--------------------------------|-------------------|
| <b>6.2</b> | <b>EARTH FAULT RELAYS</b>  |                                     |                                |                   |
| i.         | Manufacturer and Country of Origin   |                                     |                                |                   |
| ii.        | Type   |                                     | Numerical,<br>Non-Directional  |                   |
| iii.       | Manufacturer's type designation  |                                     |                                |                   |
| iv.        | Applicable standard  | IEC                                 | IEC                            |                   |
| v.         | Triple pole or single pole   |                                     | Triple                         |                   |
| vi.        | Continuous overload capacity   | x In                                |                                |                   |
| vii.       | Current setting range  | % of rated current                  | 10-80%                         |                   |
| viii.      | Operating time at 10 times current setting   | sec                                 | 3                              |                   |
| ix.        | Characteristics  |                                     | IDMT(standard<br>inverse)      |                   |
| x.         | Instantaneous unit provided<br>-Current setting range<br>-Operating range<br>-NO Contacts, Nos | Yes/No<br>% of rated current<br>mS  | Yes<br>500-2000%               |                   |
| xi.        | Insulating test according to IEC   | Yes/No                              |                                |                   |
| xii.       | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                     | Yes/No<br>Yes/No                    |                                |                   |
| xiii.      | Auxiliary DC Supply  | V <sub>dc</sub>                     | 110                            |                   |
| xvi.       | Technical literature submitted   | Yes/No                              | Yes                            |                   |
|            |  |                                     |                                |                   |
| <b>6.3</b> | <b>Directional Overcurrent Relay</b>   |                                     |                                |                   |
| i.         | Manufacturer and Country of Origin   |                                     |                                |                   |
| ii.        | Type   |                                     | Numerical<br>Directional       |                   |
| iii.       | Manufacturer's type designation  |                                     |                                |                   |
| iv.        | Applicable standard  | IEC                                 | IEC                            |                   |
| v.         | Triple pole or single pole   |                                     | Triple                         |                   |
| vi.        | Current setting range  | % of rated current                  | 20-200%                        |                   |
| vii.       | Operating time at 10 times current setting   | sec                                 | 3                              |                   |
| viii.      | Reset time   | mS                                  |                                |                   |
| ix.        | Characteristics<br>Characteristic Angle  |                                     | IDMT(standard<br>inverse), 45° |                   |
| x.         | Instantaneous unit provided<br>-Current setting range<br>-Operating range                      | Yes/No<br>% of rated<br>current, mS | Yes<br>500-2000%               |                   |
| xi.        | Insulating test according to IEC   | Yes/No                              |                                |                   |
| xii.       | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                     | Yes/No<br>Yes/No                    |                                |                   |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b><br><b>ITEM No.13: 132/33kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b> |  |  |                                    |                             |
|--|--|--|------------------------------------|-----------------------------|
| DESCRIPTION  |  |  | UNIT                               | NEA REQ                     |
| DATA to be Filled  |  |  |                                    |                             |
| xiii.  | Auxiliary DC Supply  |  | V <sub>dc</sub>                    | 110                         |
| <b>6.4</b>   | <b>Directional Earth fault Relay</b>                                       |  |                                    |                             |
| i.   | Manufacturer and Country of Origin   |  |                                    |                             |
| ii.  | Type   |  |                                    | Numerical<br>Directional    |
| iii.   | Manufacturer's type designation  |  |                                    |                             |
| iv.  | Applicable standard  |  | IEC                                | IEC                         |
| v.   | Triple pole or single pole   |  |                                    | Triple                      |
| vi.  | Continuous overload capacity   |  | xIn                                |                             |
| vii.   | Current setting range  |  | % of rated current                 | 10-80%                      |
| viii.  | Operating time at 10 times current setting                                 |  | sec                                | 3                           |
| ix.  | Characteristics<br>Characteristic Angle                                    |  |                                    | IDMT(standard inverse), 45° |
| x.   | Instantaneous unit provided<br>-Current setting range<br>-Operating range  |  | Yes/No<br>% of rated current<br>mS | Yes<br>500-2000%            |
| xi.  | Insulating test according to IEC   |  | Yes/No                             |                             |
| xii.   | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided |  | Yes/No<br>Yes/No                   |                             |
| xiii.  | Technical literature submitted   |  | Yes/No                             | Yes                         |
| <b>6.5</b>   | <b>Transformer Differential relay</b>                                      |  |                                    |                             |
| i.   | Manufacturer / Country of Origin   |  |                                    |                             |
| ii.  | Standard Reference   |  | IEC                                | IEC                         |
| iii.   | Type of Construction   |  |                                    |                             |
| iv.  | Type   |  |                                    | Numerical                   |
| v.   | Voltage Rating   |  | V                                  | 110                         |
| vi.  | Type of Mounting   |  |                                    | Flush                       |
| vii.   | Operating Time Setting, Sec  |  | mS                                 | <30                         |
| viii.  | Sensitivity Setting  |  |                                    | 20-50% x In                 |
| ix.  | Bias Setting   |  |                                    |                             |
| x.   | CT Ratio Compensating Range  |  |                                    |                             |
| xi.  | Burden for Current Circuit   |  | VA                                 |                             |
| xii.   | DC Burden  |  | VA                                 |                             |
| xiii.  | Tripping   |  | A                                  |                             |
| xiv.   | Making current   |  | A                                  |                             |
| xv.  | Closing Load (At 110V DC)  |  | A                                  |                             |
| <b>6.6</b>   | <b>AUXILIARY TRIPPING &amp; LOCKOUT RELAYS</b>                             |  |                                    |                             |
| i.   | Manufacturer and Country of Origin   |  |                                    |                             |
| ii.  | Type   |  |                                    |                             |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b><br><b>ITEM No.13:132/33 kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b> |  |                    |                   |                   | Sheet 6 of 7 |
|--|--|--------------------|-------------------|-------------------|--------------|
|  | DESCRIPTION  | UNIT               | NEA REQ           | DATA to be Filled |              |
| iii.   | Manufacturer's type designation  |                    |                   |                   |              |
| iv.  | Applicable standard  | IEC                | IEC               |                   |              |
| v.   | Operating time   | mS                 | <15               |                   |              |
| vi.  | Does the lockout relay reset by the manually operated or electrically operated reset device        |                    |                   |                   |              |
| vii.   | Is the cut-off contact provided to interrupt the operating coil ?                                  | Yes/No             |                   |                   |              |
| viii.  | Contact rating at 125V DC  | A                  |                   |                   |              |
| xi.  | Technical literature submitted   | Yes/No             | Yes               |                   |              |
| <b>6.7</b>   | <b>Breaker Fail Lockout Relay, 86K</b>   |                    |                   |                   |              |
| i.   | DC Voltage Rating, V   | V                  | 110               |                   |              |
| ii.  | Nos. of Electrically separate NO & NC Contacts   |                    |                   |                   |              |
| <b>6.8</b>   | <b>Breaker Failure Lockout Relay, 86BF &amp; LBB Protection</b>                                    |                    |                   |                   |              |
| i.   | DC Voltage Rating, V   | V                  | 110               |                   |              |
| ii.  | Nos of Electrically separate NO & NC Contacts  |                    |                   |                   |              |
| v.   | Technical literature submitted   | Yes/No             | Yes               |                   |              |
| <b>6.9</b>   | <b>BREAKER FAILURE PROTECTION RELAYS</b>   |                    |                   |                   |              |
| i.   | Manufacturer and Country of Origin   |                    |                   |                   |              |
| ii.  | Manufacturer's type designation  |                    |                   |                   |              |
| iii.   | Applicable standard  | IEC                | IEC               |                   |              |
| iv.  | Triple pole or single pole   |                    | Triple Pole       |                   |              |
| v.   | Current setting range  | % of rated current | 20-200%           |                   |              |
| vi.  | Time setting range   | sec                |                   |                   |              |
| vii.   | Reset time   | mS                 |                   |                   |              |
| viii.  | Insulating test according to IEC   | Yes/No             |                   |                   |              |
| ix.  | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                         | Yes/No<br>Yes/No   |                   |                   |              |
| x.   | Auxiliary DC Supply  | V <sub>dc</sub>    | 110               |                   |              |
| xi.  | Is manufacturer ISO 9001 holder?   | Yes/No             | Yes               |                   |              |
| xii.   | ISO certificate submitted  | Yes/No             | Yes               |                   |              |
| xiii.  | Technical literature submitted   | Yes/No             | Yes               |                   |              |
| <b>7</b>   | <b>CONSTRUCTION OF CONTROL &amp; RELAY PANEL</b>   |                    |                   |                   |              |
| i.   | Type(Simplex/Duplex)   |                    | Duplex            |                   |              |
| ii.  | Manufacturer's type designation  |                    |                   |                   |              |
| iii.   | Applicable standard  | IEC                | IEC               |                   |              |
| iv.  | Control panels furnished as per specifications   | Yes/No             | Yes               |                   |              |
| v.   | Enclosure protection class   | IP                 | IP 4X             |                   |              |
| vi.  | Thickness of sheet metal used<br>-Front and rear portion<br>-Side, top and bottom covers<br>-Doors | mm<br>mm<br>mm     | >=3<br>>=2<br>>=3 |                   |              |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |  |             |                  |                          |
|---|--|-------------|------------------|--------------------------|
| <b>ITEM No.13:132/33 kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b>     |  |             |                  | <b>Sheet 7 of 7</b>      |
|   | <b>DESCRIPTION</b>   | <b>UNIT</b> | <b>NEA REQ</b>   | <b>DATA to be Filled</b> |
| vii.  | All instruments, meters, relays and control switches flush or semi-flush type  |             | Flush            |                          |
| viii.   | Ground bus<br>-Material<br>-Size   | mm x mm     | Copper<br>25 X 6 |                          |
| ix.   | Internal Wiring<br>- Type of Insulation<br>- Voltage Grade of Wires<br>- Cross Section of wire<br>Current circuit<br>Voltage & auxiliary Circuit | V<br>Sq.mm  | 600              |                          |
| x.  | Overall dimension of control boards (LxWxH)  | mm          |                  |                          |
| xi.   | Shipping data<br>-Size of large package<br>-Weight of the heaviest package   | mm<br>Kg    |                  |                          |
| xii.  | Delivery of equipment in months following award of contract<br>(Allowing time for approval of drawing)   | month       |                  |                          |
| xiii.   | Is manufacturer is ISO 9001 holder?  | Yes/No      | Yes              |                          |
| xiv.  | ISO 9001 certificate submitted?  | Yes/No      | Yes              |                          |
| xv.   | Has manufacturer exported units?   | Yes/No      | Yes              |                          |
| xvi.  | User's certificate submitted?  | Yes/No      | Yes              |                          |
| xvii.   | Technical literature/drawings submitted?   | Yes/No      | Yes              |                          |

Deviations from technical requirements:

Signed.....  
As representative for.....  
Address.....  
Date.....



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b><br><b>ITEM No.13: 132/11 kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b> |  |                   |                     |         |                   |
|---|--|-------------------|---------------------|---------|-------------------|
| DESCRIPTION   |  |                   | UNIT                | NEA REQ | DATA to be Filled |
| <b>1</b>  | <b>CONTROL AND RELAY PANEL TYPE</b>                              |                   | <b>Duplex</b>       |         |                   |
| 1.1   | Manufacturer and Country of Origin                               |                   |                     |         |                   |
| 1.2   | Year of manufacturing experience                                 | Years             | 10                  |         |                   |
| 1.3   | Manufacturing's Designation as per submitted catalogue           |                   |                     |         |                   |
| <b>2</b>  | <b>CONTROL DISCREPANCY SWITCHES</b>                              |                   |                     |         |                   |
| 2.1   | Manufacturer and Country of Origin                               |                   |                     |         |                   |
| 2.2   | Type   |                   | Discrepancy         |         |                   |
| 2.3   | Current Rating   | A                 |                     |         |                   |
| 2.3   | Catalogue furnished  | Yes/No            | Yes                 |         |                   |
| <b>3</b>  | <b>PUSH BUTTON</b>   |                   |                     |         |                   |
| 3.1   | Manufacturer and Country of Origin                               |                   |                     |         |                   |
| 3.2   | Type   |                   |                     |         |                   |
| 3.3   | Contact Rating, continuous<br>Making Current<br>Breaking Current | Amp<br>Amp<br>Amp |                     |         |                   |
| 3.3   | Catalogue furnished  | Yes/No            | Yes                 |         |                   |
| <b>4</b>  | <b>INDICATING LAMPS</b>  |                   |                     |         |                   |
| 4.1   | Manufacturer   |                   |                     |         |                   |
| 4.2   | Voltage Rating   | V                 |                     |         |                   |
| 4.3   | Wattage  | W                 |                     |         |                   |
| <b>5</b>  | <b>INDICATING INSTRUMENTS</b>                                    |                   |                     |         |                   |
| <b>5.1</b>  | <b>Ammeter</b>   |                   |                     |         |                   |
| i.  | Manufacturer and Country of Origin                               |                   |                     |         |                   |
| ii.   | Type   |                   | Digital             |         |                   |
| iv.   | Accuracy class   |                   | 0.5                 |         |                   |
| <b>v.</b>   | <b>Scale</b>   |                   |                     |         |                   |
|   | -Type of scale   |                   | Center zero         |         |                   |
|   | -Range of indication<br>(...../1 Amp CT operated)                | A                 | 100-50-0-50-<br>100 |         |                   |
|   | -Overload range  | %                 | 1.5                 |         |                   |
| vi.   | VA Burden  |                   |                     |         |                   |
| vi.   | Transducer operated  | Yes/No            | Yes                 |         |                   |
| <b>5.2</b>  | <b>Apparent Power Meter (VAr)</b>                                |                   |                     |         |                   |
| i.  | Manufacturer and Country of Origin                               |                   |                     |         |                   |
| ii  | Type   |                   | Digital             |         |                   |
| iii   | Rated voltage  | kV                | 132/√3 :<br>0.11/√3 |         |                   |
| iv  | Rated current  | A                 | ...../1             |         |                   |
| vi  | Accuracy class   |                   | 0.5                 |         |                   |
| vii   | Scale  |                   | Centre zero         |         |                   |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b><br><b>ITEM No.13:132/11kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b> |   |        |                          |                   |
|---|---|--------|--------------------------|-------------------|
|   |   |        |                          | Sheet 2 of 7      |
|   | DESCRIPTION   | UNIT   | NEA REQ                  | DATA to be Filled |
|   | -Range of indication  | MVA    | 100-50-0-50-100          |                   |
| viii.   | VA Burden<br>Current Coil<br>Voltage Coil                       |        |                          |                   |
| x   | Transducer operated   | Yes/No | Yes                      |                   |
| <b>5.3</b>  | <b>KWh Meter</b>  |        |                          |                   |
| i.  | Manufacturer and Country of Origin                              |        |                          |                   |
| ii.   | Type  |        | Digital, 3-phase, 4 wire |                   |
| iii.  | Applicable standard   | IEC    | IEC                      |                   |
| iv.   | Accuracy class  |        | 0.2                      |                   |
| v.  | Import and Export meter provided                                | Yes/No | Yes                      |                   |
| vi.   | Rated voltage   | kV     | 132/√3 :<br>0.11/√3      |                   |
| vii.  | Rated current   | A      | ...../1                  |                   |
| viii.   | Operating current range   | A      | 1-10A                    |                   |
| ix.   | Operating Voltage range   | A      | 0-480V                   |                   |
| x.  | VA Burden<br>Current Coil<br>Voltage Coil                       | VA     |                          |                   |
| xi.   | Impulse contact provided  | Yes/No | Yes                      |                   |
| xii.  | Programmable at Site  |        | Yes                      |                   |
| xiii.   | Software and optical probe provided as per Price schedule & BOQ |        | Yes                      |                   |
| <b>5.4</b>  | <b>Wattmeter, MW Meter</b>                                      |        |                          |                   |
| i.  | Manufacturer and Country of Origin                              |        |                          |                   |
| ii.   | Type  |        | Digital                  |                   |
| iii.  | Accuracy class  |        | 0.5                      |                   |
| iii   | Rated voltage   | kV     | 132/√3 :<br>0.11/√3      |                   |
| iv  | Rated current   | A      | ...../1                  |                   |
|   | -Range of indication  | MW     | 20-10-0-10-20            |                   |
| <b>5.5</b>  | <b>Annunciators</b>   |        |                          |                   |
| I   | Manufacturer and Country of Origin                              |        |                          |                   |
| ii.   | Type  |        |                          |                   |
| iii.  | Manufacturer's type designation                                 |        |                          |                   |
| iv.   | Catalogue furnished   | Yes/No | Yes                      |                   |
| vi.   | Number of active points   | No.    | 24                       |                   |
| vii.  | Number of rows  | No.    | 4                        |                   |
| viii.   | Number of column  | No.    | 6                        |                   |
| ix.   | Type of mounting  |        | Flush                    |                   |





**TECHNICAL DATA SHEET**  
(To Be Completed By the Tenderer)

**ITEM No.13:132/11 kV CONTROL AND RELAY PANEL FOR TRANSFORMER**

**Sheet 3 of 7**

|            | DESCRIPTION   | UNIT                            | NEA REQ                         | DATA to be Filled |
|------------|---|---------------------------------|---------------------------------|-------------------|
| x.         | Replacement of individual inscription plates and lamps from front panel possible          | Yes/No                          | Yes                             |                   |
| xi.        | Sequence of operation as per specification  | Yes/No                          | Yes                             |                   |
| <b>5.6</b> | <b>RTCC Facility</b>  |                                 |                                 |                   |
| i.         | RTCC Facility in the Panel Provided   | Yes/No                          | Yes                             |                   |
| ii.        | Manufacturer and Country of Origin of AVR   |                                 | Shortlisted                     |                   |
| iii.       | Type  |                                 |                                 |                   |
| iv.        | Manufacturer's type designation   |                                 |                                 |                   |
| iv.        | Catalogue furnished   | Yes/No                          | Yes                             |                   |
| <b>5.5</b> | <b>Annunciators</b>   |                                 |                                 |                   |
| I          | Manufacturer and Country of Origin  |                                 |                                 |                   |
| ii.        | Type  |                                 |                                 |                   |
| iii.       | Manufacturer's type designation   |                                 |                                 |                   |
| iv.        | Catalogue furnished   | Yes/No                          | Yes                             |                   |
| vi.        | Number of active points   | No.                             | 24                              |                   |
| vii.       | Number of rows  | No.                             | 4                               |                   |
| <b>6</b>   | <b>PROTECTIVE RELAYS</b>  |                                 |                                 |                   |
| <b>6.1</b> | <b>PHASE OVERCURRENT RELAYS</b>   |                                 |                                 |                   |
| i.         | Manufacturer and Country of Origin  |                                 |                                 |                   |
| ii.        | Type  |                                 | Numerical<br>Non<br>Directional |                   |
| iii.       | Manufacturer's type designation   |                                 |                                 |                   |
| iv.        | Applicable standard   | IEC                             | IEC                             |                   |
| v.         | Triple pole or single pole  |                                 | Triple Pole                     |                   |
| vi.        | Current setting range   | % of rated<br>current           | 20-200%                         |                   |
| vii.       | Operating time at 10 times current setting  | sec                             | 3                               |                   |
| viii.      | Reset time  | mS                              |                                 |                   |
| ix.        | Characteristics   |                                 | IDMT(standa<br>rd inverse)      |                   |
| x.         | Instantaneous unit provided<br>-Current setting range<br>-Operating range<br>-NO Contacts | Yes/No<br>% of rated<br>current | Yes<br>500-2000%                |                   |
| xi.        | Insulating test according to IEC  | Yes/No                          |                                 |                   |
| xii.       | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                | Yes/No<br>Yes/No                |                                 |                   |
| xiii.      | Auxiliary DC Supply   | V <sub>dc</sub>                 | 110                             |                   |
| xiv.       | Technical literature submitted  | Yes/No                          | Yes                             |                   |





## TECHNICAL DATA SHEET

(To Be Completed By the Tenderer)

### ITEM No.13:132/11 kV CONTROL AND RELAY PANEL FOR TRANSFORMER

Sheet 4 of 7

|            | DESCRIPTION  | UNIT                                | NEA REQ                        | DATA to be Filled |
|------------|--|-------------------------------------|--------------------------------|-------------------|
| <b>6.2</b> | <b>EARTH FAULT RELAYS</b>  |                                     |                                |                   |
| i.         | Manufacturer and Country of Origin   |                                     |                                |                   |
| ii.        | Type   |                                     | Numerical,<br>Non-Directional  |                   |
| iii.       | Manufacturer's type designation  |                                     |                                |                   |
| iv.        | Applicable standard  | IEC                                 | IEC                            |                   |
| v.         | Triple pole or single pole   |                                     | Triple                         |                   |
| vi.        | Continuous overload capacity   | x In                                |                                |                   |
| vii.       | Current setting range  | % of rated current                  | 10-80%                         |                   |
| viii.      | Operating time at 10 times current setting   | sec                                 | 3                              |                   |
| ix.        | Characteristics  |                                     | IDMT(standard<br>inverse)      |                   |
| x.         | Instantaneous unit provided<br>-Current setting range<br>-Operating range<br>-NO Contacts, Nos | Yes/No<br>% of rated current<br>mS  | Yes<br>500-2000%               |                   |
| xi.        | Insulating test according to IEC   | Yes/No                              |                                |                   |
| xii.       | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                     | Yes/No<br>Yes/No                    |                                |                   |
| xiii.      | Auxiliary DC Supply  | V <sub>dc</sub>                     | 110                            |                   |
| xvi.       | Technical literature submitted   | Yes/No                              | Yes                            |                   |
|            |  |                                     |                                |                   |
| <b>6.3</b> | <b>Directional Overcurrent Relay</b>   |                                     |                                |                   |
| i.         | Manufacturer and Country of Origin   |                                     |                                |                   |
| ii.        | Type   |                                     | Numerical<br>Directional       |                   |
| iii.       | Manufacturer's type designation  |                                     |                                |                   |
| iv.        | Applicable standard  | IEC                                 | IEC                            |                   |
| v.         | Triple pole or single pole   |                                     | Triple                         |                   |
| vi.        | Current setting range  | % of rated current                  | 20-200%                        |                   |
| vii.       | Operating time at 10 times current setting   | sec                                 | 3                              |                   |
| viii.      | Reset time   | mS                                  |                                |                   |
| ix.        | Characteristics<br>Characteristic Angle  |                                     | IDMT(standard<br>inverse), 45° |                   |
| x.         | Instantaneous unit provided<br>-Current setting range<br>-Operating range                      | Yes/No<br>% of rated<br>current, mS | Yes<br>500-2000%               |                   |
| xi.        | Insulating test according to IEC   | Yes/No                              |                                |                   |
| xii.       | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                     | Yes/No<br>Yes/No                    |                                |                   |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |  |                                    |                             |                   |
|---|--|------------------------------------|-----------------------------|-------------------|
| ITEM No.13: 132/11kV CONTROL AND RELAY PANEL FOR TRANSFORMER            |  |                                    |                             | Sheet 5 of 7      |
|   | DESCRIPTION  | UNIT                               | NEA REQ                     | DATA to be Filled |
| xiii.   | Auxiliary DC Supply  | V <sub>dc</sub>                    | 110                         |                   |
| <b>6.4</b>  | <b>Directional Earth fault Relay</b>                                       |                                    |                             |                   |
| i.  | Manufacturer and Country of Origin   |                                    |                             |                   |
| ii.   | Type   |                                    | Numerical<br>Directional    |                   |
| iii.  | Manufacturer's type designation  |                                    |                             |                   |
| iv.   | Applicable standard  | IEC                                | IEC                         |                   |
| v.  | Triple pole or single pole   |                                    | Triple                      |                   |
| vi.   | Continuous overload capacity   | xIn                                |                             |                   |
| vii.  | Current setting range  | % of rated current                 | 10-80%                      |                   |
| viii.   | Operating time at 10 times current setting                                 | sec                                | 3                           |                   |
| ix.   | Characteristics<br>Characteristic Angle                                    |                                    | IDMT(standard inverse), 45° |                   |
| x.  | Instantaneous unit provided<br>-Current setting range<br>-Operating range  | Yes/No<br>% of rated current<br>mS | Yes<br>500-2000%            |                   |
| xi.   | Insulating test according to IEC   | Yes/No                             |                             |                   |
| xii.  | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided | Yes/No<br>Yes/No                   |                             |                   |
| xiii.   | Technical literature submitted   | Yes/No                             | Yes                         |                   |
| <b>6.5</b>  | <b>Transformer Differential relay</b>                                      |                                    |                             |                   |
| i.  | Manufacturer / Country of Origin   |                                    |                             |                   |
| ii.   | Standard Reference   | IEC                                | IEC                         |                   |
| iii.  | Type of Construction   |                                    |                             |                   |
| iv.   | Type   |                                    | Numerical                   |                   |
| v.  | Voltage Rating   | V                                  | 110                         |                   |
| vi.   | Type of Mounting   |                                    | Flush                       |                   |
| vii.  | Operating Time Setting, Sec  | mS                                 | <30                         |                   |
| viii.   | Sensitivity Setting  |                                    | 20-50% x In                 |                   |
| ix.   | Bias Setting   |                                    |                             |                   |
| x.  | CT Ratio Compensating Range  |                                    |                             |                   |
| xi.   | Burden for Current Circuit   | VA                                 |                             |                   |
| xii.  | DC Burden  | VA                                 |                             |                   |
| xiii.   | Tripping   | A                                  |                             |                   |
| xiv.  | Making current   | A                                  |                             |                   |
| xv.   | Closing Load (At 110V DC)  | A                                  |                             |                   |
| <b>6.6</b>  | <b>AUXILIARY TRIPPING &amp; LOCKOUT RELAYS</b>                             |                                    |                             |                   |
| i.  | Manufacturer and Country of Origin   |                                    |                             |                   |
| ii.   | Type   |                                    |                             |                   |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b><br><b>ITEM No.13:132/11 kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b> |  |                    |                   |                   | Sheet 6 of 7 |
|--|--|--------------------|-------------------|-------------------|--------------|
|  | DESCRIPTION  | UNIT               | NEA REQ           | DATA to be Filled |              |
| iii.   | Manufacturer's type designation  |                    |                   |                   |              |
| iv.  | Applicable standard  | IEC                | IEC               |                   |              |
| v.   | Operating time   | mS                 | <15               |                   |              |
| vi.  | Does the lockout relay reset by the manually operated or electrically operated reset device        |                    |                   |                   |              |
| vii.   | Is the cut-off contact provided to interrupt the operating coil ?                                  | Yes/No             |                   |                   |              |
| viii.  | Contact rating at 125V DC  | A                  |                   |                   |              |
| xi.  | Technical literature submitted   | Yes/No             | Yes               |                   |              |
| <b>6.7</b>   | <b>Breaker Fail Lockout Relay, 86K</b>   |                    |                   |                   |              |
| i.   | DC Voltage Rating, V   | V                  | 110               |                   |              |
| ii.  | Nos. of Electrically separate NO & NC Contacts   |                    |                   |                   |              |
| <b>6.8</b>   | <b>Breaker Failure Lockout Relay, 86BF &amp; LBB Protection</b>                                    |                    |                   |                   |              |
| i.   | DC Voltage Rating, V   | V                  | 110               |                   |              |
| ii.  | Nos of Electrically separate NO & NC Contacts  |                    |                   |                   |              |
| v.   | Technical literature submitted   | Yes/No             | Yes               |                   |              |
| <b>6.9</b>   | <b>BREAKER FAILURE PROTECTION RELAYS</b>   |                    |                   |                   |              |
| i.   | Manufacturer and Country of Origin   |                    |                   |                   |              |
| ii.  | Manufacturer's type designation  |                    |                   |                   |              |
| iii.   | Applicable standard  | IEC                | IEC               |                   |              |
| iv.  | Triple pole or single pole   |                    | Triple Pole       |                   |              |
| v.   | Current setting range  | % of rated current | 20-200%           |                   |              |
| vi.  | Time setting range   | sec                |                   |                   |              |
| vii.   | Reset time   | mS                 |                   |                   |              |
| viii.  | Insulating test according to IEC   | Yes/No             |                   |                   |              |
| ix.  | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                         | Yes/No<br>Yes/No   |                   |                   |              |
| x.   | Auxiliary DC Supply  | V <sub>dc</sub>    | 110               |                   |              |
| xi.  | Is manufacturer ISO 9001 holder?   | Yes/No             | Yes               |                   |              |
| xii.   | ISO certificate submitted  | Yes/No             | Yes               |                   |              |
| xiii.  | Technical literature submitted   | Yes/No             | Yes               |                   |              |
| <b>7</b>   | <b>CONSTRUCTION OF CONTROL &amp; RELAY PANEL</b>   |                    |                   |                   |              |
| i.   | Type(Simplex/Duplex)   |                    | Duplex            |                   |              |
| ii.  | Manufacturer's type designation  |                    |                   |                   |              |
| iii.   | Applicable standard  | IEC                | IEC               |                   |              |
| iv.  | Control panels furnished as per specifications   | Yes/No             | Yes               |                   |              |
| v.   | Enclosure protection class   | IP                 | IP 4X             |                   |              |
| vi.  | Thickness of sheet metal used<br>-Front and rear portion<br>-Side, top and bottom covers<br>-Doors | mm<br>mm<br>mm     | >=3<br>>=2<br>>=3 |                   |              |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |  |             |                  |                          |
|---|--|-------------|------------------|--------------------------|
| <b>ITEM No.13:132/11 kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b>     |  |             |                  | <b>Sheet 7 of 7</b>      |
|   | <b>DESCRIPTION</b>   | <b>UNIT</b> | <b>NEA REQ</b>   | <b>DATA to be Filled</b> |
| vii.  | All instruments, meters, relays and control switches flush or semi-flush type  |             | Flush            |                          |
| viii.   | Ground bus<br>-Material<br>-Size   | mm x mm     | Copper<br>25 X 6 |                          |
| ix.   | Internal Wiring<br>- Type of Insulation<br>- Voltage Grade of Wires<br>- Cross Section of wire<br>Current circuit<br>Voltage & auxiliary Circuit | V<br>Sq.mm  | 600              |                          |
| x.  | Overall dimension of control boards (LxWxH)  | mm          |                  |                          |
| xi.   | Shipping data<br>-Size of large package<br>-Weight of the heaviest package   | mm<br>Kg    |                  |                          |
| xii.  | Delivery of equipment in months following award of contract<br>(Allowing time for approval of drawing)   | month       |                  |                          |
| xiii.   | Is manufacturer is ISO 9001 holder?  | Yes/No      | Yes              |                          |
| xiv.  | ISO 9001 certificate submitted?  | Yes/No      | Yes              |                          |
| xv.   | Has manufacturer exported units?   | Yes/No      | Yes              |                          |
| xvi.  | User's certificate submitted?  | Yes/No      | Yes              |                          |
| xvii.   | Technical literature/drawings submitted?   | Yes/No      | Yes              |                          |

Deviations from technical requirements:

Signed.....  
As representative for.....  
Address.....  
Date.....



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b><br><b>ITEM No.13: 33/11 kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b> |  |                   |                     |                   |
|--|--|-------------------|---------------------|-------------------|
| DESCRIPTION  |  | UNIT              | NEA REQ             | DATA to be Filled |
| <b>1</b>   | <b>CONTROL AND RELAY PANEL TYPE</b>                              | <b>Duplex</b>     |                     |                   |
| 1.1  | Manufacturer and Country of Origin                               |                   |                     |                   |
| 1.2  | Year of manufacturing experience                                 | Years             | 10                  |                   |
| 1.3  | Manufacturing's Designation as per submitted catalogue           |                   |                     |                   |
| <b>2</b>   | <b>CONTROL DISCREPANCY SWITCHES</b>                              |                   |                     |                   |
| 2.1  | Manufacturer and Country of Origin                               |                   |                     |                   |
| 2.2  | Type   |                   | Discrepancy         |                   |
| 2.3  | Current Rating   | A                 |                     |                   |
| 2.3  | Catalogue furnished  | Yes/No            | Yes                 |                   |
| <b>3</b>   | <b>PUSH BUTTON</b>   |                   |                     |                   |
| 3.1  | Manufacturer and Country of Origin                               |                   |                     |                   |
| 3.2  | Type   |                   |                     |                   |
| 3.3  | Contact Rating, continuous<br>Making Current<br>Breaking Current | Amp<br>Amp<br>Amp |                     |                   |
| 3.3  | Catalogue furnished  | Yes/No            | Yes                 |                   |
| <b>4</b>   | <b>INDICATING LAMPS</b>  |                   |                     |                   |
| 4.1  | Manufacturer   |                   |                     |                   |
| 4.2  | Voltage Rating   | V                 |                     |                   |
| 4.3  | Wattage  | W                 |                     |                   |
| <b>5</b>   | <b>INDICATING INSTRUMENTS</b>                                    |                   |                     |                   |
| <b>5.1</b>   | <b>Ammeter</b>   |                   |                     |                   |
| i.   | Manufacturer and Country of Origin                               |                   |                     |                   |
| ii.  | Type   |                   | Digital             |                   |
| iv.  | Accuracy class   |                   | 0.5                 |                   |
| <b>v.</b>  | <b>Scale</b>   |                   |                     |                   |
|  | -Type of scale   |                   | Center zero         |                   |
|  | -Range of indication<br>(...../1 Amp CT operated)                | A                 | 100-50-0-50-<br>100 |                   |
|  | -Overload range  | %                 | 1.5                 |                   |
| vi.  | VA Burden  |                   |                     |                   |
| vi.  | Transducer operated  | Yes/No            | Yes                 |                   |
| <b>5.2</b>   | <b>Apparent Power Meter (VAr)</b>                                |                   |                     |                   |
| i.   | Manufacturer and Country of Origin                               |                   |                     |                   |
| ii   | Type   |                   | Digital             |                   |
| iii  | Rated voltage  | kV                | 132/√3 :<br>0.11/√3 |                   |
| iv   | Rated current  | A                 | ...../1             |                   |
| vi   | Accuracy class   |                   | 0.5                 |                   |
| vii  | Scale  |                   | Centre zero         |                   |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b><br><b>ITEM No.13:33/11kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b> |   |        |                          |                   |
|--|---|--------|--------------------------|-------------------|
| DESCRIPTION  |   | UNIT   | NEA REQ                  | DATA to be Filled |
|  | -Range of indication  | MVA    | 100-50-0-50-100          |                   |
| viii.  | VA Burden<br>Current Coil<br>Voltage Coil                       |        |                          |                   |
| x  | Transducer operated   | Yes/No | Yes                      |                   |
| <b>5.3</b>   | <b>KWh Meter</b>  |        |                          |                   |
| i.   | Manufacturer and Country of Origin                              |        |                          |                   |
| ii.  | Type  |        | Digital, 3-phase, 4 wire |                   |
| iii.   | Applicable standard   | IEC    | IEC                      |                   |
| iv.  | Accuracy class  |        | 0.2                      |                   |
| v.   | Import and Export meter provided                                | Yes/No | Yes                      |                   |
| vi.  | Rated voltage   | kV     | 132/√3 :<br>0.11/√3      |                   |
| vii.   | Rated current   | A      | ...../1                  |                   |
| viii.  | Operating current range   | A      | 1-10A                    |                   |
| ix.  | Operating Voltage range   | A      | 0-480V                   |                   |
| x.   | VA Burden<br>Current Coil<br>Voltage Coil                       | VA     |                          |                   |
| xi.  | Impulse contact provided  | Yes/No | Yes                      |                   |
| xii.   | Programmable at Site  |        | Yes                      |                   |
| xiii.  | Software and optical probe provided as per Price schedule & BOQ |        | Yes                      |                   |
| <b>5.4</b>   | <b>Wattmeter, MW Meter</b>                                      |        |                          |                   |
| i.   | Manufacturer and Country of Origin                              |        |                          |                   |
| ii.  | Type  |        | Digital                  |                   |
| iii.   | Accuracy class  |        | 0.5                      |                   |
| iii  | Rated voltage   | kV     | 132/√3 :<br>0.11/√3      |                   |
| iv   | Rated current   | A      | ...../1                  |                   |
|  | -Range of indication  | MW     | 20-10-0-10-20            |                   |
| <b>5.5</b>   | <b>Annunciators</b>   |        |                          |                   |
| I  | Manufacturer and Country of Origin                              |        |                          |                   |
| ii.  | Type  |        |                          |                   |
| iii.   | Manufacturer's type designation                                 |        |                          |                   |
| iv.  | Catalogue furnished   | Yes/No | Yes                      |                   |
| vi.  | Number of active points   | No.    | 24                       |                   |
| vii.   | Number of rows  | No.    | 4                        |                   |
| viii.  | Number of column  | No.    | 6                        |                   |
| ix.  | Type of mounting  |        | Flush                    |                   |



| <b>TECHNICAL DATA SHEET</b><br>(To Be Completed By the Tenderer)   |   |                              |                                 |                          |
|--|---|------------------------------|---------------------------------|--------------------------|
| <b>ITEM No.13:33/11 kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b> |   |                              |                                 | <b>Sheet 3 of 7</b>      |
|  | <b>DESCRIPTION</b>  | <b>UNIT</b>                  | <b>NEA REQ</b>                  | <b>DATA to be Filled</b> |
| x.   | Replacement of individual inscription plates and lamps from front panel possible          | Yes/No                       | Yes                             |                          |
| xi.  | Sequence of operation as per specification  | Yes/No                       | Yes                             |                          |
| <b>5.6</b>   | <b>RTCC Facility</b>  |                              |                                 |                          |
| i.   | RTCC Facility in the Panel Provided   | Yes/No                       | Yes                             |                          |
| ii.  | Manufacturer and Country of Origin of AVR   |                              | Shortlisted                     |                          |
| iii.   | Type  |                              |                                 |                          |
| iv.  | Manufacturer's type designation   |                              |                                 |                          |
| iv.  | Catalogue furnished   | Yes/No                       | Yes                             |                          |
| <b>5.5</b>   | <b>Annunciators</b>   |                              |                                 |                          |
| I  | Manufacturer and Country of Origin  |                              |                                 |                          |
| ii.  | Type  |                              |                                 |                          |
| iii.   | Manufacturer's type designation   |                              |                                 |                          |
| iv.  | Catalogue furnished   | Yes/No                       | Yes                             |                          |
| vi.  | Number of active points   | No.                          | 24                              |                          |
| vii.   | Number of rows  | No.                          | 4                               |                          |
| <b>6</b>   | <b>PROTECTIVE RELAYS</b>  |                              |                                 |                          |
| <b>6.1</b>   | <b>PHASE OVERCURRENT RELAYS</b>   |                              |                                 |                          |
| i.   | Manufacturer and Country of Origin  |                              |                                 |                          |
| ii.  | Type  |                              | Numerical<br>Non<br>Directional |                          |
| iii.   | Manufacturer's type designation   |                              |                                 |                          |
| iv.  | Applicable standard   | IEC                          | IEC                             |                          |
| v.   | Triple pole or single pole  |                              | Triple Pole                     |                          |
| vi.  | Current setting range   | % of rated current           | 20-200%                         |                          |
| vii.   | Operating time at 10 times current setting  | sec                          | 3                               |                          |
| viii.  | Reset time  | mS                           |                                 |                          |
| ix.  | Characteristics   |                              | IDMT(standard inverse)          |                          |
| x.   | Instantaneous unit provided<br>-Current setting range<br>-Operating range<br>-NO Contacts | Yes/No<br>% of rated current | Yes<br>500-2000%                |                          |
| xi.  | Insulating test according to IEC  | Yes/No                       |                                 |                          |
| xii.   | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                | Yes/No<br>Yes/No             |                                 |                          |
| xiii.  | Auxiliary DC Supply   | V <sub>dc</sub>              | 110                             |                          |
| xiv.   | Technical literature submitted  | Yes/No                       | Yes                             |                          |





## TECHNICAL DATA SHEET

(To Be Completed By the Tenderer)

### ITEM No.13:33/11 kV CONTROL AND RELAY PANEL FOR TRANSFORMER

Sheet 4 of 7

|            | DESCRIPTION  | UNIT                                | NEA REQ                        | DATA to be Filled |
|------------|--|-------------------------------------|--------------------------------|-------------------|
| <b>6.2</b> | <b>EARTH FAULT RELAYS</b>  |                                     |                                |                   |
| i.         | Manufacturer and Country of Origin   |                                     |                                |                   |
| ii.        | Type   |                                     | Numerical,<br>Non-Directional  |                   |
| iii.       | Manufacturer's type designation  |                                     |                                |                   |
| iv.        | Applicable standard  | IEC                                 | IEC                            |                   |
| v.         | Triple pole or single pole   |                                     | Triple                         |                   |
| vi.        | Continuous overload capacity   | x In                                |                                |                   |
| vii.       | Current setting range  | % of rated current                  | 10-80%                         |                   |
| viii.      | Operating time at 10 times current setting   | sec                                 | 3                              |                   |
| ix.        | Characteristics  |                                     | IDMT(standard<br>inverse)      |                   |
| x.         | Instantaneous unit provided<br>-Current setting range<br>-Operating range<br>-NO Contacts, Nos | Yes/No<br>% of rated current<br>mS  | Yes<br>500-2000%               |                   |
| xi.        | Insulating test according to IEC   | Yes/No                              |                                |                   |
| xii.       | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                     | Yes/No<br>Yes/No                    |                                |                   |
| xiii.      | Auxiliary DC Supply  | V <sub>dc</sub>                     | 110                            |                   |
| xvi.       | Technical literature submitted   | Yes/No                              | Yes                            |                   |
|            |  |                                     |                                |                   |
| <b>6.3</b> | <b>Directional Overcurrent Relay</b>   |                                     |                                |                   |
| i.         | Manufacturer and Country of Origin   |                                     |                                |                   |
| ii.        | Type   |                                     | Numerical<br>Directional       |                   |
| iii.       | Manufacturer's type designation  |                                     |                                |                   |
| iv.        | Applicable standard  | IEC                                 | IEC                            |                   |
| v.         | Triple pole or single pole   |                                     | Triple                         |                   |
| vi.        | Current setting range  | % of rated current                  | 20-200%                        |                   |
| vii.       | Operating time at 10 times current setting   | sec                                 | 3                              |                   |
| viii.      | Reset time   | mS                                  |                                |                   |
| ix.        | Characteristics<br>Characteristic Angle  |                                     | IDMT(standard<br>inverse), 45° |                   |
| x.         | Instantaneous unit provided<br>-Current setting range<br>-Operating range                      | Yes/No<br>% of rated<br>current, mS | Yes<br>500-2000%               |                   |
| xi.        | Insulating test according to IEC   | Yes/No                              |                                |                   |
| xii.       | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                     | Yes/No<br>Yes/No                    |                                |                   |





| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b><br><b>ITEM No.13: 33/11kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b> |  |  |                                    |                             |
|---|--|--|------------------------------------|-----------------------------|
| DESCRIPTION   |  |  | UNIT                               | NEA REQ                     |
| DATA to be Filled   |  |  |                                    |                             |
| xiii.   | Auxiliary DC Supply  |  | V <sub>dc</sub>                    | 110                         |
| <b>6.4</b>  | <b>Directional Earth fault Relay</b>                                       |  |                                    |                             |
| i.  | Manufacturer and Country of Origin   |  |                                    |                             |
| ii.   | Type   |  |                                    | Numerical<br>Directional    |
| iii.  | Manufacturer's type designation  |  |                                    |                             |
| iv.   | Applicable standard  |  | IEC                                | IEC                         |
| v.  | Triple pole or single pole   |  |                                    | Triple                      |
| vi.   | Continuous overload capacity   |  | xIn                                |                             |
| vii.  | Current setting range  |  | % of rated current                 | 10-80%                      |
| viii.   | Operating time at 10 times current setting                                 |  | sec                                | 3                           |
| ix.   | Characteristics<br>Characteristic Angle                                    |  |                                    | IDMT(standard inverse), 45° |
| x.  | Instantaneous unit provided<br>-Current setting range<br>-Operating range  |  | Yes/No<br>% of rated current<br>mS | Yes<br>500-2000%            |
| xi.   | Insulating test according to IEC   |  | Yes/No                             |                             |
| xii.  | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided |  | Yes/No<br>Yes/No                   |                             |
| xiii.   | Technical literature submitted   |  | Yes/No                             | Yes                         |
| <b>6.5</b>  | <b>Transformer Differential relay</b>                                      |  |                                    |                             |
| i.  | Manufacturer / Country of Origin   |  |                                    |                             |
| ii.   | Standard Reference   |  | IEC                                | IEC                         |
| iii.  | Type of Construction   |  |                                    |                             |
| iv.   | Type   |  |                                    | Numerical                   |
| v.  | Voltage Rating   |  | V                                  | 110                         |
| vi.   | Type of Mounting   |  |                                    | Flush                       |
| vii.  | Operating Time Setting, Sec  |  | mS                                 | <30                         |
| viii.   | Sensitivity Setting  |  |                                    | 20-50% x In                 |
| ix.   | Bias Setting   |  |                                    |                             |
| x.  | CT Ratio Compensating Range  |  |                                    |                             |
| xi.   | Burden for Current Circuit   |  | VA                                 |                             |
| xii.  | DC Burden  |  | VA                                 |                             |
| xiii.   | Tripping   |  | A                                  |                             |
| xiv.  | Making current   |  | A                                  |                             |
| xv.   | Closing Load (At 110V DC)  |  | A                                  |                             |
| <b>6.6</b>  | <b>AUXILIARY TRIPPING &amp; LOCKOUT RELAYS</b>                             |  |                                    |                             |
| i.  | Manufacturer and Country of Origin   |  |                                    |                             |
| ii.   | Type   |  |                                    |                             |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b><br><b>ITEM No.13:33/11 kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b> |  |                    |                   |                   | Sheet 6 of 7 |
|---|--|--------------------|-------------------|-------------------|--------------|
|   | DESCRIPTION  | UNIT               | NEA REQ           | DATA to be Filled |              |
| iii.  | Manufacturer's type designation  |                    |                   |                   |              |
| iv.   | Applicable standard  | IEC                | IEC               |                   |              |
| v.  | Operating time   | mS                 | <15               |                   |              |
| vi.   | Does the lockout relay reset by the manually operated or electrically operated reset device        |                    |                   |                   |              |
| vii.  | Is the cut-off contact provided to interrupt the operating coil ?                                  | Yes/No             |                   |                   |              |
| viii.   | Contact rating at 125V DC  | A                  |                   |                   |              |
| xi.   | Technical literature submitted   | Yes/No             | Yes               |                   |              |
| <b>6.7</b>  | <b>Breaker Fail Lockout Relay, 86K</b>   |                    |                   |                   |              |
| i.  | DC Voltage Rating, V   | V                  | 110               |                   |              |
| ii.   | Nos. of Electrically separate NO & NC Contacts   |                    |                   |                   |              |
| <b>6.8</b>  | <b>Breaker Failure Lockout Relay, 86BF &amp; LBB Protection</b>                                    |                    |                   |                   |              |
| i.  | DC Voltage Rating, V   | V                  | 110               |                   |              |
| ii.   | Nos of Electrically separate NO & NC Contacts  |                    |                   |                   |              |
| v.  | Technical literature submitted   | Yes/No             | Yes               |                   |              |
| <b>6.9</b>  | <b>BREAKER FAILURE PROTECTION RELAYS</b>   |                    |                   |                   |              |
| i.  | Manufacturer and Country of Origin   |                    |                   |                   |              |
| ii.   | Manufacturer's type designation  |                    |                   |                   |              |
| iii.  | Applicable standard  | IEC                | IEC               |                   |              |
| iv.   | Triple pole or single pole   |                    | Triple Pole       |                   |              |
| v.  | Current setting range  | % of rated current | 20-200%           |                   |              |
| vi.   | Time setting range   | sec                |                   |                   |              |
| vii.  | Reset time   | mS                 |                   |                   |              |
| viii.   | Insulating test according to IEC   | Yes/No             |                   |                   |              |
| ix.   | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                         | Yes/No<br>Yes/No   |                   |                   |              |
| x.  | Auxiliary DC Supply  | V <sub>dc</sub>    | 110               |                   |              |
| xi.   | Is manufacturer ISO 9001 holder?   | Yes/No             | Yes               |                   |              |
| xii.  | ISO certificate submitted  | Yes/No             | Yes               |                   |              |
| xiii.   | Technical literature submitted   | Yes/No             | Yes               |                   |              |
| <b>7</b>  | <b>CONSTRUCTION OF CONTROL &amp; RELAY PANEL</b>   |                    |                   |                   |              |
| i.  | Type(Simplex/Duplex)   |                    | Duplex            |                   |              |
| ii.   | Manufacturer's type designation  |                    |                   |                   |              |
| iii.  | Applicable standard  | IEC                | IEC               |                   |              |
| iv.   | Control panels furnished as per specifications   | Yes/No             | Yes               |                   |              |
| v.  | Enclosure protection class   | IP                 | IP 4X             |                   |              |
| vi.   | Thickness of sheet metal used<br>-Front and rear portion<br>-Side, top and bottom covers<br>-Doors | mm<br>mm<br>mm     | >=3<br>>=2<br>>=3 |                   |              |



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |  |             |                  |                          |
|---|--|-------------|------------------|--------------------------|
| <b>ITEM No.13:33/11 kV CONTROL AND RELAY PANEL FOR TRANSFORMER</b>      |  |             |                  | <b>Sheet 7 of 7</b>      |
|   | <b>DESCRIPTION</b>   | <b>UNIT</b> | <b>NEA REQ</b>   | <b>DATA to be Filled</b> |
| vii.  | All instruments, meters, relays and control switches flush or semi-flush type  |             | Flush            |                          |
| viii.   | Ground bus<br>-Material<br>-Size   | mm x mm     | Copper<br>25 X 6 |                          |
| ix.   | Internal Wiring<br>- Type of Insulation<br>- Voltage Grade of Wires<br>- Cross Section of wire<br>Current circuit<br>Voltage & auxiliary Circuit | V<br>Sq.mm  | 600              |                          |
| x.  | Overall dimension of control boards (LxWxH)  | mm          |                  |                          |
| xi.   | Shipping data<br>-Size of large package<br>-Weight of the heaviest package   | mm<br>Kg    |                  |                          |
| xii.  | Delivery of equipment in months following award of contract<br>(Allowing time for approval of drawing)   | month       |                  |                          |
| xiii.   | Is manufacturer is ISO 9001 holder?  | Yes/No      | Yes              |                          |
| xiv.  | ISO 9001 certificate submitted?  | Yes/No      | Yes              |                          |
| xv.   | Has manufacturer exported units?   | Yes/No      | Yes              |                          |
| xvi.  | User's certificate submitted?  | Yes/No      | Yes              |                          |
| xvii.   | Technical literature/drawings submitted?   | Yes/No      | Yes              |                          |

Deviations from technical requirements:

Signed.....  
As representative for.....  
Address.....  
Date.....



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |  |        |                                     |                   |
|---|--|--------|-------------------------------------|-------------------|
| <b>ITEM No.14 :33kV LINE CONTROL AND RELAY PANEL</b>                    |  |        |                                     |                   |
|   | DESCRIPTION  | UNIT   |                                     | DATA to be Filled |
| <b>1</b>  | <b>CONTROL AND RELAY PANEL TYPE</b>                    |        |                                     |                   |
|   |  |        | <b>Simplex</b>                      |                   |
| 1.1   | Manufacturer and Country of Origin                     |        |                                     |                   |
| 1.2   | Year of manufacturing experience                       | Years  | 10                                  |                   |
| 1.3   | Manufacturing's Designation as per submitted catalogue |        |                                     |                   |
| <b>2</b>  | <b>CONTROL DISCREPANCY SWITCHES</b>                    |        |                                     |                   |
| 2.1   | Manufacturer and Country of Origin                     |        |                                     |                   |
| 2.2   | Type   |        | Discrepancy                         |                   |
| 2.3   | Current Rating   | A      |                                     |                   |
| 2.3   | Catalogue furnished                                    | Yes/No | Yes                                 |                   |
| <b>3</b>  | <b>PUSH BUTTON</b>                                     |        |                                     |                   |
| 3.1   | Manufacturer and Country of Origin                     |        |                                     |                   |
| 3.2   | Type   |        |                                     |                   |
| 3.3   | Contact Rating, continuous                             | Amp    |                                     |                   |
|   | Making Current   | Amp    |                                     |                   |
|   | Breaking Current                                       | Amp    |                                     |                   |
| 3.3   | Catalogue furnished                                    | Yes/No | Yes                                 |                   |
| <b>4</b>  | <b>INDICATING LAMPS</b>                                |        |                                     |                   |
| 4.1   | Manufacturer   |        |                                     |                   |
| 4.2   | Voltage Rating   | V      |                                     |                   |
| 4.3   | Wattage  | W      |                                     |                   |
| <b>5</b>  | <b>INDICATING INSTRUMENTS</b>                          |        |                                     |                   |
| <b>5.1</b>  | <b>Ammeter</b>   |        |                                     |                   |
| i.  | Manufacturer and Country of Origin                     |        |                                     |                   |
| ii.   | Type   |        | Digital                             |                   |
| iv.   | Accuracy class   |        | 0.5                                 |                   |
| <b>v.</b>   | <b>Scale</b>   |        |                                     |                   |
|   | -Type of scale   |        | Center zero                         |                   |
|   | -Range of indication<br>(...../1 Amp CT operated)      | A      | 1200-600-<br>300-0-300-<br>600-1200 |                   |
|   | -Overload range  | %      | 1.5                                 |                   |
| vi.   | VA Burden  |        |                                     |                   |
| vi.   | Transducer operated                                    | Yes/No | Yes                                 |                   |



|            |  |        |                                    |  |
|------------|--|--------|------------------------------------|--|
| <b>5.2</b> | <b>Apparent Power Meter (VA)</b>                                   |        |                                    |  |
| i.         | Manufacturer and Country of Origin                                 |        |                                    |  |
| ii         | Type   |        | Digital                            |  |
| iii        | Rated voltage  | kV     | $33/\sqrt{3}$ :<br>$0.11/\sqrt{3}$ |  |
|            | Rated current  | A      | ...../1                            |  |
| vi         | Accuracy class   |        | 0.5                                |  |
| vii        | Scale  |        | Centre zero                        |  |
| viii.      | VA Burden<br>Current Coil<br>Voltage Coil                          |        |                                    |  |
| x          | Transducer operated  | Yes/No | Yes                                |  |
| <b>5.3</b> | <b>KWh Meter</b>   |        |                                    |  |
| i.         | Manufacturer and Country of Origin                                 |        |                                    |  |
| ii.        | Type   |        | Digital, 3-<br>phase, 4 wire       |  |
| iii.       | Applicable standard  | IEC    | IEC                                |  |
| iv.        | Accuracy class   |        | 0.2                                |  |
| v.         | Import and Export meter provided                                   | Yes/No | Yes                                |  |
| vi.        | Rated voltage  | kV     | $33/\sqrt{3}$ :<br>$0.11/\sqrt{3}$ |  |
| vii.       | Rated current  | A      | ...../1                            |  |
| viii.      | Operating current range  | A      | 1-10A                              |  |
| ix.        | Operating Voltage range  | A      | 0-480V                             |  |
| x.         | VA Burden<br>Current Coil<br>Voltage Coil                          | VA     |                                    |  |
| xi.        | Impulse contact provided   | Yes/No | Yes                                |  |
| xii.       | Programmable at Site   |        | Yes                                |  |
| xiii.      | Software and optical probe provided as per<br>Price schedule & BOQ |        | Yes                                |  |
| <b>5.4</b> | <b>Voltmeter</b>   |        |                                    |  |
| i.         | Manufacturer & Country of origin                                   |        |                                    |  |



|            |   |                              |                                    |  |
|------------|---|------------------------------|------------------------------------|--|
| ii         | Type  |                              |                                    |  |
| iii        | Accuracy Class  |                              |                                    |  |
| iv         | VA Burden   |                              |                                    |  |
| v          | Transducer Operated(Yes/NO)   | Yes                          |                                    |  |
| <b>5.4</b> | <b>Watt meter, MW</b>   |                              |                                    |  |
| i.         | Manufacturer and Country of Origin  |                              |                                    |  |
| ii.        | Type  |                              | Digital                            |  |
| iii.       | Accuracy class  |                              | 0.5                                |  |
| iii        | Rated voltage   | kV                           | $33/\sqrt{3}$ :<br>$0.11/\sqrt{3}$ |  |
| iv         | Rated current   | A                            | ...../1                            |  |
|            | -Range of indication  | MW                           | 0-50-100                           |  |
| <b>5.6</b> | <b>Annunciators</b>   |                              |                                    |  |
| I          | Manufacturer and Country of Origin  |                              |                                    |  |
| ii.        | Type  |                              |                                    |  |
| iii.       | Manufacturer's type designation   |                              |                                    |  |
| iv.        | Catalogue furnished   | Yes/No                       | Yes                                |  |
| vi.        | Number of active points   | No.                          | 24                                 |  |
| vii.       | Number of rows  | No.                          | 4                                  |  |
| viii.      | Number of column  | No.                          | 6                                  |  |
| ix.        | Type of mounting  |                              | Flush                              |  |
| x.         | Replacement of individual inscription plates and lamps from front panel possible          | Yes/No                       | Yes                                |  |
| xi.        | Sequence of operation as per specification  | Yes/No                       | Yes                                |  |
| <b>6</b>   | <b>PROTECTIVE RELAYS</b>  |                              |                                    |  |
| <b>6.1</b> | <b>PHASE OVERCURRENT RELAYS</b>   |                              |                                    |  |
| i.         | Manufacturer and Country of Origin  |                              |                                    |  |
| ii.        | Type  |                              | Numerical<br>Non<br>Directional    |  |
| iii.       | Manufacturer's type designation   |                              |                                    |  |
| iv.        | Applicable standard   | IEC                          | IEC                                |  |
| v.         | Triple pole or single pole  |                              | Triple Pole                        |  |
| vi.        | Current setting range   | % of rated current           | 20-200%                            |  |
| vii.       | Operating time at 10 times current setting  | sec                          | 3                                  |  |
| viii.      | Reset time  | mS                           |                                    |  |
| ix.        | Characteristics   |                              | IDMT(standard inverse)             |  |
| x.         | Instantaneous unit provided<br>-Current setting range<br>-Operating range<br>-NO Contacts | Yes/No<br>% of rated current | Yes<br>500-2000%                   |  |
| xi.        | Insulating test according to IEC  | Yes/No                       |                                    |  |
| xii.       | Indication<br>-Hand reset flags provided  | Yes/No                       |                                    |  |



|            |  |                       |                               |  |
|------------|--|-----------------------|-------------------------------|--|
|            | -Light emitting diode provided   | Yes/No                |                               |  |
| xiii.      | Auxiliary DC Supply  | V <sub>dc</sub>       | 110                           |  |
| xiv.       | Technical literature submitted   | Yes/No                | Yes                           |  |
| <b>6.2</b> | <b>EARTH FAULT RELAYS</b>  |                       |                               |  |
| i.         | Manufacturer and Country of Origin   |                       |                               |  |
| ii.        | Type   |                       | Numerical,<br>Non-Directional |  |
| iii.       | Manufacturer's type designation  |                       |                               |  |
| iv.        | Applicable standard  | IEC                   | IEC                           |  |
| v.         | Triple pole or single pole   |                       | Triple                        |  |
| vi.        | Continuous overload capacity   | x In                  |                               |  |
| vii.       | Current setting range  | % of rated<br>current | 10-80%                        |  |
| viii.      | Operating time at 10 times current setting                                     | sec                   | 3                             |  |
| ix.        | Characteristics  |                       | IDMT(standard<br>inverse)     |  |
| x.         | Instantaneous unit provided  | Yes/No                | Yes                           |  |
|            | -Current setting range   | % of rated<br>current | 500-2000%                     |  |
|            | -Operating range   | mS                    |                               |  |
|            | -NO Contacts, Nos  |                       |                               |  |
| xi.        | Insulating test according to IEC   | Yes/No                |                               |  |
| xii.       | Indication   |                       |                               |  |
|            | -Hand reset flags provided   | Yes/No                |                               |  |
|            | -Light emitting diode provided   | Yes/No                |                               |  |
| xiii.      | Auxiliary DC Supply  | V <sub>dc</sub>       | 110                           |  |
| xvi.       | Technical literature submitted   | Yes/No                | Yes                           |  |
| <b>6.3</b> | <b>AUXILIARY TRIPPING &amp; LOCKOUT RELAYS</b>                                 |                       |                               |  |
| i.         | Manufacturer and Country of Origin   |                       |                               |  |
| ii.        | Type   |                       |                               |  |
| iii.       | Manufacturer's type designation  |                       |                               |  |
| iv.        | Applicable standard  | IEC                   | IEC                           |  |
| v.         | Operating time   | mS                    | <15                           |  |
| vi.        | Does the lockout relay reset by the manually operated or electrically operated |                       |                               |  |



|            |  |                    |             |  |
|------------|--|--------------------|-------------|--|
|            | reset device   |                    |             |  |
| vii.       | Is the cut-off contact provided to interrupt the operating coil ?          | Yes/No             |             |  |
| viii.      | Contact rating at 125V DC  | A                  |             |  |
| xi.        | Technical literature submitted   | Yes/No             | Yes         |  |
| <b>6.4</b> | <b>Breaker Fail Lockout Relay, 86K</b>                                     |                    |             |  |
| i.         | DC Voltage Rating, V   | V                  | 110         |  |
| ii.        | Nos. of Electrically separate NO & NC Contacts                             |                    |             |  |
| <b>6.5</b> | <b>Breaker Failure Lockout Relay, 86BF &amp; LBB Protection</b>            |                    |             |  |
| i.         | DC Voltage Rating, V   | V                  | 110         |  |
| ii.        | Nos of Electrically separate NO & NC Contacts                              |                    |             |  |
| v.         | Technical literature submitted   | Yes/No             | Yes         |  |
| <b>6.6</b> | <b>BREAKER FAILURE PROTECTION RELAYS</b>                                   |                    |             |  |
| i.         | Manufacturer and Country of Origin   |                    |             |  |
| ii.        | Manufacturer's type designation  |                    |             |  |
| iii.       | Applicable standard  | IEC                | IEC         |  |
| iv.        | Triple pole or single pole   |                    | Triple Pole |  |
| v.         | Current setting range  | % of rated current | 20-200%     |  |
| vi.        | Time setting range   | sec                |             |  |
| vii.       | Reset time   | mS                 |             |  |
| viii.      | Insulating test according to IEC   | Yes/No             |             |  |
| ix.        | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided | Yes/No<br>Yes/No   |             |  |
| x.         | Auxiliary DC Supply  | V <sub>dc</sub>    | 110         |  |
| xi.        | Is manufacturer ISO 9001 holder?   | Yes/No             | Yes         |  |





|          |   |         |         |  |
|----------|---|---------|---------|--|
| xii.     | ISO certificate submitted   | Yes/No  | Yes     |  |
| xiii.    | Technical literature submitted  | Yes/No  | Yes     |  |
| <b>7</b> | <b>CONSTRUCTION OF CONTROL &amp; RELAY PANEL</b>                              |         |         |  |
| i.       | Type(Simplex/Duplex)  |         | Simplex |  |
| ii.      | Manufacturer's type designation   |         |         |  |
| iii.     | Applicable standard   | IEC     | IEC     |  |
|          |   |         |         |  |
| iv.      | Control panels furnished as per specifications                                | Yes/No  | Yes     |  |
| v.       | Enclosure protection class  | IP      | IP 4X   |  |
| vi.      | Thickness of sheet metal used   |         |         |  |
|          | -Front and rear portion   | mm      | >=3     |  |
|          | -Side, top and bottom covers  | mm      | >=2     |  |
|          | -Doors  | mm      | >=3     |  |
| vii.     | All instruments, meters, relays and control switches flush or semi-flush type |         | Flush   |  |
| viii.    | Ground bus  |         |         |  |
|          | -Material   |         | Copper  |  |
|          | -Size   | mm x mm | 25 X 6  |  |
| ix.      | Internal Wiring   |         |         |  |
|          | - Type of Insulation  |         |         |  |
|          | - Voltage Grade of Wires  |         |         |  |
|          | - Cross Section of wire   |         |         |  |
|          | Current circuit   | V       | 600     |  |
|          | Voltage & auxiliary Circuit   | Sq.mm   |         |  |
| x.       | Overall dimension of control boards (LxWxH)                                   | mm      |         |  |
| xi.      | Shipping data   |         |         |  |
|          | -Size of large package  | mm      |         |  |
|          | -Weight of the heaviest package   | Kg      |         |  |



|       |  |        |     |  |
|-------|--|--------|-----|--|
| xii.  | Delivery of equipment in months following award of contract<br><br>(Allowing time for approval of drawing) | month  |     |  |
| xiii. | Is manufacturer is ISO 9001 holder?  | Yes/No | Yes |  |
| xiv.  | ISO 9001 certificate submitted?  | Yes/No | Yes |  |
| xv.   | Has manufacturer exported units?   | Yes/No | Yes |  |
| xvi.  | User's certificate submitted?  | Yes/No | Yes |  |
| xvii. | Technical literature/drawings submitted?   | Yes/No | Yes |  |

Deviations from technical requirements

Signed.....  
As representative for.....  
Address.....  
Date.....



| ITEM No.11: 120kV LIGHTNING ARRESTOR |   |        |                                  | Sheet 1 of 1 |
|--------------------------------------|---|--------|----------------------------------|--------------|
|                                      | DESCRIPTION   | UNIT   | REQUIREMENT                      | OFFERED DATA |
| 1.                                   | Manufacturer and Country of origin                                |        |                                  |              |
| 2.                                   | Years of manufacturing service                                    | Years  | 10                               |              |
| 3.                                   | Manufacturer's designation as per submitted catalogue / Model No. |        | To be furnished                  |              |
| 4.                                   | Applicable standard   |        | IEC                              |              |
| 5.                                   | Type  |        | Gap less metal – oxide / Outdoor |              |
| 6.                                   | Rated voltage rating of L.A.                                      | kV     | 120                              |              |
| 7.                                   | Impulse withstand voltage, (crest)                                | kV     | 650                              |              |
| 8.                                   | Power frequency withstand voltage                                 | kV     | 275                              |              |
| 9.                                   | . Rated frequency   | Hz     | 50                               |              |
| 10.                                  | Nominal discharge current   | kA     | 10                               |              |
| 11.                                  | Surge counter with insulating base furnished?                     | Yes/No | Yes for transmission line        |              |
| 12.                                  | Leakage current measuring instrument furnished?                   | Yes/No | Yes for transmission line        |              |
| 13.                                  | Porcelain creepage distance                                       | mm     | 3300                             |              |
| 14.                                  | Line terminal with accessories provided                           | Yes/No | Yes                              |              |
| 15.                                  | Earth terminal with accessories provided                          | Yes/No | Yes                              |              |
| 16.                                  | Has manufacturer exported such units?                             | Yes/No | Yes                              |              |

Deviations from technical requirements:

Signed.....

As representative for.....

Address..... Date.....



| ITEM No.12: 33 kV LIGHTNING ARRESTOR |   |        |                              | Sheet 1 of 1      |
|--------------------------------------|---|--------|------------------------------|-------------------|
|                                      | DESCRIPTION   | UNIT   | NEA REQ                      | DATA to be Filled |
| 1                                    | Manufacturer and Country of Origin  |        |                              |                   |
| 2                                    | Year of manufacturing experience  | Years  | 10                           |                   |
| 3                                    | Manufacturing's Designation as per submitted catalogue  |        |                              |                   |
| 4                                    | Applicable standard   |        | IEC                          |                   |
| 5                                    | Type  |        | Outdoor, gapless, Zinc-Oxide |                   |
| 6                                    | Voltage rating of L.A   | kV     | 30                           |                   |
| 7                                    | Nominal discharge current   | kA     | 10                           |                   |
| 8                                    | Surge counter with insulating base furnished  | Yes/No | Yes                          |                   |
| 9                                    | Minimum power frequency sparkover voltage   | kV     |                              |                   |
| 10                                   | Maximum 1/50 impulse sparkover voltage  | kV     |                              |                   |
| 11                                   | Maximum front wave sparkover voltage  | kV     |                              |                   |
| 12                                   | Maximum switching surge sparkover voltage   | kV     |                              |                   |
| 13                                   | Number of section per Pole  |        | 1                            |                   |
| 14                                   | Insulation level  |        |                              |                   |
|                                      | a) Impulse withstand voltage(peak)  | kV     | 170                          |                   |
|                                      | b) Power frequency withstand voltage (1min, rms)  | kV     | 70                           |                   |
| 15                                   | Porcelain creepage distance   | mm     | 825                          |                   |
| 16                                   | Earth terminal with accessories provided  | Yes/No | Yes                          |                   |
| 17                                   | Delivery of equipment in months following award of contract (Allowing time for approval of drawing) | month  |                              |                   |
| 18                                   | Is manufacturer is ISO 9001 holder?   | Yes/No | Yes                          |                   |
| 19                                   | Has manufacturer exported units?  | Yes/No | Yes                          |                   |
| 20                                   | Technical literature/drawings submitted?  | Yes/No | Yes                          |                   |

Deviations from technical requirements:

Signed.....

As representative for.....

Address..... Date.....



| <b>TECHNICAL DATA SHEET</b><br>(To Be Completed By the Tenderer) |   |                 |                              |                          |
|--|---|-----------------|------------------------------|--------------------------|
| <b>ITEM No.2: 11kVVACUUM CIRCUIT BREAKER</b>                     |   |                 | <b>Sheet 1 of 8</b>          |                          |
|  | DESCRIPTION   | UNIT            | NEA REQ. FOR 11kV VCB        | DATA OF OFFERED 11kV VCB |
| <b>A</b>   | <b>SWITCHGEAR MANUFACTURER</b>                                    |                 |                              |                          |
| <b>1</b>   | <b>Manufacturer and Country of Origin</b>                         |                 |                              |                          |
| <b>2</b>   | <b>Year of manufacturing experience</b>                           | Years           | 10                           |                          |
| <b>3</b>   | <b>Manufacturing's Designation as per submitted catalogue</b>     |                 | To be furnished              |                          |
| <b>4</b>   | <b>Applicable standard</b>  |                 | IEC                          |                          |
| <b>B</b>   | <b>BUSBAR</b>   |                 |                              |                          |
| 1  | Material  |                 |                              |                          |
|  | -Incomer  |                 | Copper                       |                          |
|  | -Outgoing feeder  |                 | Copper                       |                          |
| 2  | Size  |                 |                              |                          |
|  | a. Main bus   | mm <sup>2</sup> |                              |                          |
|  | b. Ground bus   | mm <sup>2</sup> |                              |                          |
| 3  | Minimum Clearance   |                 |                              |                          |
|  | a. Phase to phase   | mm              |                              |                          |
|  | b. Phase to ground  | mm              |                              |                          |
| 4  | Bus bar Rated Current   |                 |                              |                          |
|  | a. Continuous at 40 deg. C amb.                                   | A               | 2500                         |                          |
|  | b. Short time current for 3 sec                                   | kA              | 25                           |                          |
| 5  | Rated Voltage   | kV              | 12                           |                          |
| 6  | Bus Support Insulators  |                 |                              |                          |
|  | a. Manufacturer   |                 |                              |                          |
|  | b. Type   |                 |                              |                          |
|  | c. Impulse Withstand Voltage                                      | kV              | 75                           |                          |
|  | d. Power frequency withstand voltage( 1 min. rms)                 | kV              | 28                           |                          |
| 7  | Busbar joint silver plated?                                       | Yes/No          | Yes                          |                          |
| <b>C</b>   | <b>CIRCUIT BREAKER</b>  |                 |                              |                          |
| 1  | Manufacturer  |                 |                              |                          |
| 2  | Type  |                 | Vacuum, with moving carriage |                          |
| 3  | Manufacturing's Designation as per submitted catalogue /Model No. |                 | To be furnished              |                          |
| 4  | Rated Voltage   | kV              | 12                           |                          |
| 5  | Number of possible operation without maintenance                  |                 |                              |                          |
|  | -Rated short circuit breaking current                             | No.             | 100                          |                          |
|  | -Rated normal current   | No.             | 10000                        |                          |
|  | -For mechanism  | No.             | 30000                        |                          |
| 6  | Frequency   | Hz              | 50                           |                          |
| 7  | Rated current   |                 |                              |                          |



## TECHNICAL DATA SHEET

(To Be Completed By the Tenderer)

### ITEM No.2: 11kV VACUUM CIRCUIT BREAKER

Sheet 2 of 8

|      | DESCRIPTION   | UNIT                     | NEA REQ. FOR 11kV VCB        | DATA OF OFFERED 11kV VCB |
|------|---|--------------------------|------------------------------|--------------------------|
| 7.1  | Continuous at 45 degree ambient<br>Incomer<br>Outgoing            | A<br>A                   | 2500/2000<br>1250            |                          |
| 7.2  | Short circuit current for 3 sec.                                  | kA                       | 25                           |                          |
| 8    | Vacuum Interrupter  |                          |                              |                          |
|      | a. Make   |                          |                              |                          |
|      | b. Rating   |                          |                              |                          |
| 9    | Rated short circuit breaking current (rms sym.)                   | kA                       | 25                           |                          |
| 10   | Interrupting time   | ms                       | 60                           |                          |
| 11   | Rated short circuit making current                                |                          |                              |                          |
| 11.1 | Peak  | kA                       | 63                           |                          |
| 12   | Closing time, max   | mS                       | 120                          |                          |
| 13   | Insulation level  |                          |                              |                          |
|      | a. Impulse Withstand Voltage                                      | kV                       | 75                           |                          |
|      | b. Power frequency withstand Voltage                              | kV                       | 28                           |                          |
| 14   | Operating Mechanism   |                          |                              |                          |
|      | a. Type   |                          | Spring with motor charging   |                          |
|      | b. Operating voltage range<br>-Closing<br>-Tripping               | % of<br>rated<br>voltage | 85-110%<br>70-110%           |                          |
|      | c. Closing and Tripping coils current                             | A                        |                              |                          |
|      | d. Duty cycle   |                          | CO-15sec -CO                 |                          |
| 15   | Spring charging motor   |                          |                              |                          |
|      | a. Type and Manufacturer  |                          |                              |                          |
|      | b. Voltage  | V                        | 110 V DC                     |                          |
|      | c. Rating   | kW                       | Spring operated              |                          |
|      | d. Time required by motor to charge the spring completely         | sec                      | <30                          |                          |
| 16   | Total no. of auxiliary contacts                                   |                          |                              |                          |
|      | a. Normally open  | No.                      | 8                            |                          |
|      | b. Normally closed  | No.                      | 8                            |                          |
|      | c. Contact ratings( make and continuous current)                  |                          |                              |                          |
|      | -AC at 230V   | A                        | 1                            |                          |
|      | -DC inductive at 110 Volt   | A                        | 0.5                          |                          |
| 17   | Overall Dimension (L*W*H)   | mm                       |                              |                          |
| D    | CURRENT TRANSFORMER   |                          |                              |                          |
| 1    | Manufacturer  |                          |                              |                          |
| 2    | Type  |                          | Cubicle mounted, epoxy resin |                          |
| 3    | Manufacturing's Designation as per submitted catalogue /Model No. |                          | To be furnished              |                          |
| 4    | Frequency   | Hz                       | 50                           |                          |



| <b>TECHNICAL DATA SHEET</b>                   |   |             |  |                                 |
|---|---|-------------|--|---------------------------------|
| <b>(To Be Completed By the Tenderer)</b>      |   |             |  |                                 |
| <b>ITEM No.2: 11kV VACUUM CIRCUIT BREAKER</b> |   |             | <b>Sheet 3 of 8</b>                                      |                                 |
|   | <b>DESCRIPTION</b>  | <b>UNIT</b> | <b>NEA REQ. FOR 11kV VCB</b>                             | <b>DATA OF OFFERED 11kV VCB</b> |
| 5   | Voltage Class   | kV          | 12   |                                 |
| 6   | Reference standard  |             | IEC  |                                 |
| 7.1   | <ul style="list-style-type: none"> <li>- For Incomer, Buscoupler</li> <li>- Nos. of Core</li> <li>- Ratio / Class / Burden</li> <li>- Metering</li> <li>- Protection</li> <li>- Differential</li> </ul> |             | 3<br>1000-2400/1A<br>0.5, 15VA<br>5P20, 15VA<br>PS, 15VA |                                 |
| 7.2   | For Outgoing Feeders <ul style="list-style-type: none"> <li>- Nos. of Core</li> <li>- Ratio / Class / Burden</li> <li>- Metering</li> <li>- Protection</li> </ul>                                       |             | 2<br>300-600/1A<br>0.5, 15VA<br>5P20, 15VA               |                                 |
| 8   | Insulation level  |             |  |                                 |
|   | a. Impulse Withstand Voltage  | kV          | 75   |                                 |
|   | b. Power frequency withstand Voltage  | kV          | 28   |                                 |
| E   | <b>VOLTAGE TRANSFORMER</b>  |             |  |                                 |
| 1   | Manufacturer  |             |  |                                 |
| 2   | Type  |             | Incomer Cubical mounted                                  |                                 |
| 3   | Manufacturing's Designation as per submitted catalogue /Model No.   |             | To be furnished  |                                 |
| 4   | Frequency   | Hz          | 50   |                                 |
| 5   | Voltage Class   | kV          | 12   |                                 |
| 6   | Reference standard  |             | IEC  |                                 |
| 7   | Voltage Transformer for Incomer Feeder <ul style="list-style-type: none"> <li>- Ratio</li> <li>- Accuracy Class</li> <li>- Burden</li> </ul>  | kV<br>VA    | $11/\sqrt{3}/0.11/\sqrt{3}$<br>0.5, 3P<br>100            |                                 |
| 8   | Insulation level  |             |  |                                 |
|   | a. Impulse Withstand Voltage  | kV          | 75   |                                 |
|   | b. Power frequency withstand Voltage  | kV          | 28   |                                 |
| 9   | Overall Dimension (L*W*H)   | mm          |  |                                 |
| 10  | Weight  | kg          |  |                                 |
| 11  | Fuses(HV/LV)  |             |  |                                 |
|   | a) Type   |             |  |                                 |
|   | b) Continuous ratings   | A           |  |                                 |
|   | c) Symmetrical fault rating   | kV          |  |                                 |
| F   | <b>INDICATING INSTRUMENTS</b>   |             |  |                                 |
| 1   | <b>kWh Meter</b>  |             |  |                                 |
| i.  | Manufacturer and Country of Origin  |             |  |                                 |
| ii.   | Type  |             | Digital, 3-phase, 4 wire                                 |                                 |
| iii.  | Applicable standard   | IEC         | IEC  |                                 |



| <b>TECHNICAL DATA SHEET</b>                  |   |             |                               |                                 |
|--|---|-------------|-------------------------------|---------------------------------|
| <b>(To Be Completed By the Tenderer)</b>     |   |             |                               |                                 |
| <b>ITEM No.2: 11kVVACUUM CIRCUIT BREAKER</b> |   |             | <b>Sheet 4 of 8</b>           |                                 |
|  | <b>DESCRIPTION</b>  | <b>UNIT</b> | <b>NEA REQ. FOR 11kV VCB</b>  | <b>DATA OF OFFERED 11kV VCB</b> |
| iv.  | Accuracy class  |             | 0.5                           |                                 |
| v.   | Import and Export meter provided                                | Yes/No      | Yes                           |                                 |
| vi.  | Rated voltage   | V           | 110                           |                                 |
| vii.   | Rated current   | A           | 1                             |                                 |
| viii.  | Operating current range   | A           | 0 – 10                        |                                 |
| ix.  | Operating Voltage range   | V           | 0 - 480                       |                                 |
| x.   | VA Burden<br>Current Coil<br>Voltage Coil                       | VA          |                               |                                 |
| xi.  | Test Impulse output provided                                    | Yes/No      | Yes                           |                                 |
| xii.   | Programmable at Site  | Yes/No      | Yes                           |                                 |
| xiii.  | Software and optical probe provided as per Price schedule & BOQ | Yes/No      | Yes                           |                                 |
| xiv.   | Load profile can be downloaded                                  | Yes/No      | Yes                           |                                 |
| 2  | <b>Ammeter</b>  |             |                               |                                 |
| i.   | Manufacturer and Country of Origin                              |             |                               |                                 |
| ii.  | Type  |             |                               |                                 |
| iii.   | Accuracy class  |             | 0.5                           |                                 |
| v.   | Scale   |             |                               |                                 |
|  | -Range of indication<br>For Incomer<br>For Outgoing Feeder      | A<br>A      | As per specification          |                                 |
|  | -Overload range   | %           | 1.5                           |                                 |
| vi.  | VA Burden   |             |                               |                                 |
| 3  | <b>Voltmeter for Incomer Only</b>                               |             |                               |                                 |
| i.   | Manufacturer and Country of Origin                              |             |                               |                                 |
| ii.  | Type  |             | Digital                       |                                 |
| iii.   | Accuracy class  |             | 0.5                           |                                 |
| iv.  | Scale   |             |                               |                                 |
|  | -Range of indication  | kV          | 0-15                          |                                 |
| v.   | VA Burden   |             |                               |                                 |
| 4  | <b>Watt Meter (MW)</b>  |             |                               |                                 |
| i.   | Manufacturer and Country of Origin                              |             |                               |                                 |
| ii   | Type  |             |                               |                                 |
| iii  | Rated voltage   | kV          | $11/\sqrt{3} : 0.11/\sqrt{3}$ |                                 |
| iv   | Rated current   | A           |                               |                                 |
| vi   | Accuracy class  |             | 0.5                           |                                 |
| 5  | <b>Power Factor Meter (PF)</b>                                  |             |                               |                                 |
| i.   | Manufacturer and Country of Origin                              |             |                               |                                 |
| ii   | Type  |             |                               |                                 |
| iii  | Rated voltage   | kV          |                               |                                 |
| iv   | Rated current   | A           |                               |                                 |
| vi   | Accuracy class  |             |                               |                                 |





| <b>TECHNICAL DATA SHEET</b>                  |   |                                    |                              |                                 |
|--|---|------------------------------------|------------------------------|---------------------------------|
| <b>(To Be Completed By the Tenderer)</b>     |   |                                    |                              |                                 |
| <b>ITEM No.2: 11kVVACUUM CIRCUIT BREAKER</b> |   |                                    |                              | <b>Sheet 5 of 8</b>             |
|  | <b>DESCRIPTION</b>  | <b>UNIT</b>                        | <b>NEA REQ. FOR 11kV VCB</b> | <b>DATA OF OFFERED 11kV VCB</b> |
| vii.   | Range of indication   |                                    |                              |                                 |
|  | - Incomer   | MW                                 | 0-10/20                      |                                 |
|  | - Outgoing feeder   | MW                                 | 0-1/2                        |                                 |
| <b>G</b>                                     | <b>ANNUNCIATORS</b>   |                                    |                              |                                 |
| <b>I</b>                                     | Manufacturer and Country of Origin  |                                    |                              |                                 |
| ii.  | Type  |                                    |                              |                                 |
| vi.  | Number of active points   | No.                                | 6                            |                                 |
| ix.  | Type of mounting  |                                    | Flush                        |                                 |
| x.   | Replacement of individual inscription plates and lamps from front panel possible          | Yes/No                             | Yes                          |                                 |
| xi.  | Sequence of operation as per specification  | Yes/No                             | Yes                          |                                 |
| <b>H</b>                                     | <b>PROTECTIVE RELAYS</b>  |                                    |                              |                                 |
| 1  | Manufacturer & country of origin  |                                    |                              |                                 |
| 2  | Years of manufacturing service  | Years                              | 10                           |                                 |
| 3  | Reference standard  |                                    | IEC                          |                                 |
| 4  | <b>Overcurrent Relays (Non Directional) for Outgoing Feeders</b>                          |                                    |                              |                                 |
| i.   | Manufacturer and Country of Origin  |                                    |                              |                                 |
| ii.  | Type  |                                    | Numerical<br>Non-Directional |                                 |
| iii.   | Manufacturer's type designation   |                                    |                              |                                 |
| v.   | No of Pole  |                                    | Three                        |                                 |
| vi.  | Current setting range   | % of<br>rated<br>current           | 20-250%                      |                                 |
| vii.   | Operating time at 10 times current setting  | sec                                | 3                            |                                 |
| viii.  | Reset time  | mS                                 |                              |                                 |
| ix.  | Characteristics   |                                    | IDMT(standard inverse)       |                                 |
| x.   | Instantaneous unit provided<br>-Current setting range<br>-Operating range<br>-NO Contacts | Yes/No<br>% of<br>rated<br>current | Yes<br>200-2500%             |                                 |
| xi.  | Insulating test according to IEC  | Yes/No                             |                              |                                 |
| xii.   | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                | Yes/No<br>Yes/No                   |                              |                                 |
| xiii.  | Auxilliary DC Supply  | V                                  | 110                          |                                 |
| xvi.   | Technical literature submitted  | Yes/No                             | Yes                          |                                 |
| <b>5</b>                                     | <b>Earth fault relays (non directional) for Outgoing Feeders</b>                          |                                    |                              |                                 |



| <b>TECHNICAL DATA SHEET</b>                  |  |                                    |                                      |                                 |
|--|--|------------------------------------|--------------------------------------|---------------------------------|
| <b>(To Be Completed By the Tenderer)</b>     |  |                                    |                                      |                                 |
| <b>ITEM No.2: 11kVVACUUM CIRCUIT BREAKER</b> |  |                                    | <b>Sheet 6 of 8</b>                  |                                 |
|  | <b>DESCRIPTION</b>   | <b>UNIT</b>                        | <b>NEA REQ. FOR 11kV VCB</b>         | <b>DATA OF OFFERED 11kV VCB</b> |
| i.   | Manufacturer and Country of Origin   |                                    |                                      |                                 |
| ii.  | Type   |                                    | Numerical/ Non-Directional           |                                 |
| iv.  | Applicable standard  |                                    |                                      |                                 |
| vi.  | Continuous overload capacity   | x In                               |                                      |                                 |
| vii.   | Current setting range  | % of In                            | 10-100%                              |                                 |
| viii.  | Operating time at 10 times current setting   | sec                                | 3                                    |                                 |
| ix.  | Characteristics  |                                    | IDMT(standard inverse)               |                                 |
| x.   | Instantaneous unit provided<br>-Current setting range<br>-Operating range<br>-NO Contacts, Nos | Yes/No<br>%<br>of In               | Yes<br>50-500%                       |                                 |
| xi.  | Insulating test according to IEC   | Yes/No                             |                                      |                                 |
| xii.   | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                     | Yes/No<br>Yes/No                   |                                      |                                 |
| xiii.  | Auxilliary DC Supply   | V                                  | 110                                  |                                 |
| xiv.   | Technical literature submitted   | Yes/No                             | Yes                                  |                                 |
| xv.  | Type test certificate submitted  | Yes/No                             | Yes                                  |                                 |
| 6  | <b>Directional Phase Over current Relays for Incomer Panel</b>                                 |                                    |                                      |                                 |
| i.   | Manufacturer and Country of Origin   |                                    |                                      |                                 |
| ii.  | Type   |                                    | Static<br>(Numerical)<br>Directional |                                 |
| iii.   | Manufacturer's type designation  |                                    |                                      |                                 |
| iv.  | Applicable standard  |                                    |                                      |                                 |
| v.   | Triple pole or single pole   |                                    | triple                               |                                 |
| vi.  | Current setting range  | % of<br>rated<br>current           | 50-200%                              |                                 |
| vii.   | Operating time at 10 times current setting   | sec                                | 3                                    |                                 |
| viii.  | Reset time   | mS                                 |                                      |                                 |
|  | Contact rating at 125V DC  | A                                  |                                      |                                 |
| ix.  | Characteristics  |                                    | IDMT(standard inverse)               |                                 |
| x.   | Instantaneous unit provided<br>-Current setting range<br>-Operating range<br>-NO Contacts      | Yes/No<br>% of<br>rated<br>current | Yes<br>500-2000%                     |                                 |
| xi.  | Insulating test according to IEC   | Yes/No                             |                                      |                                 |
| xii.   | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                     | Yes/No<br>Yes/No                   |                                      |                                 |
| xiii.  | Auxiliary DC Supply  | V                                  | 110                                  |                                 |



| <b>TECHNICAL DATA SHEET</b>                  |  |  |                                     |                                 |
|--|--|--|-------------------------------------|---------------------------------|
| <b>(To Be Completed By the Tenderer)</b>     |  |  |                                     |                                 |
| <b>ITEM No.2: 11kVVACUUM CIRCUIT BREAKER</b> |  |  | <b>Sheet 7 of 8</b>                 |                                 |
|  | <b>DESCRIPTION</b>   | <b>UNIT</b>                              | <b>NEA REQ. FOR 11kV VCB</b>        | <b>DATA OF OFFERED 11kV VCB</b> |
| 7  | <b>DIRECTIONAL EARTH FAULT RELAYS For Incomer Panel</b>  |  |                                     |                                 |
| i.   | Manufacturer and Country of Origin   |  |                                     |                                 |
| ii.  | Type   |  | Static (Numerical)<br>/ Directional |                                 |
| iii.   | Manufacturer's type designation  |  |                                     |                                 |
| iv.  | Applicable standard  |  |                                     |                                 |
| v.   | Triple pole or single pole   |  | Single                              |                                 |
| vi.  | Continuous overload capacity   | x In                                     |                                     |                                 |
| vii.   | Current setting range  | % of<br>rated<br>current                 | 10-80%                              |                                 |
| viii.  | Operating time at 10 times current setting   | sec                                      | 3                                   |                                 |
| ix.  | Characteristics  |  | IDMT(standard inverse)              |                                 |
| x.   | Instantaneous unit provided<br>-Current setting range<br>-Operating range<br>-NO Contacts, Nos | Yes/No<br>% of<br>rated<br>current<br>mS | Yes<br>500-2000%                    |                                 |
| xi.  | Insulating test according to IEC   | Yes/No                                   |                                     |                                 |
| xii.   | Indication<br>-Hand reset flags provided<br>-Light emitting diode provided                     | Yes/No<br>Yes/No                         |                                     |                                 |
| xiii.  | Auxilliary DC Supply   | V  | 110                                 |                                 |
| xiv.   | Is manufacturer ISO 9001 holder?   | Yes/No                                   | Yes                                 |                                 |
| xv.  | ISO certificate submitted  | Yes/No                                   | Yes                                 |                                 |
| xvi.   | Technical literature submitted   | Yes/No                                   | Yes                                 |                                 |
| xvii.  | Type test certificate submitted  | Yes/No                                   | Yes                                 |                                 |
| xv.  | Has manufacturer exported units?   | Yes/No                                   | Yes                                 |                                 |
| xvi.   | User's certificate submitted?  | Yes/No                                   | Yes                                 |                                 |
| xvii.  | Technical literature/drawings submitted?   | Yes/No                                   | Yes                                 |                                 |
| 8  | <b>Auxiliary Tripping &amp; Lockout Relays</b>   |  |                                     |                                 |
| i.   | Manufacturer and Country of Origin   |  |                                     |                                 |
| ii.  | Type   |  |                                     |                                 |
| iii.   | Manufacturer's type designation  |  |                                     |                                 |
| iv.  | Applicable standard  |  |                                     |                                 |
| v.   | Operating time   | mS                                       | <15                                 |                                 |
| viii.  | Contact rating at 125V DC  | A  |                                     |                                 |
| I  | <b>EARTHING SWITCH</b>   |  |                                     |                                 |
|  | - Type   |  | Integrated                          |                                 |
|  | - Rating   |  |                                     |                                 |
|  | - Interlocking   |  | Yes / No                            |                                 |



| <b>TECHNICAL DATA SHEET</b>                  |   |                    |                              |                                 |
|--|---|--------------------|------------------------------|---------------------------------|
| <b>(To Be Completed By the Tenderer)</b>     |   |                    |                              |                                 |
| <b>ITEM No.2: 11kVVACUUM CIRCUIT BREAKER</b> |   |                    | <b>Sheet 8 of 8</b>          |                                 |
|  | <b>DESCRIPTION</b>  | <b>UNIT</b>        | <b>NEA REQ. FOR 11kV VCB</b> | <b>DATA OF OFFERED 11kV VCB</b> |
| J  | <b>SURGE ARRESTORS for Incomer</b><br>Type<br>rating  | kA                 | ZnO<br>9kV, 10kA             |                                 |
| K  | <b>SWITCHGEAR ASSEMBLY</b>  |                    |                              |                                 |
| 1  | Type of Switchgear  |                    |                              |                                 |
| 2  | Enclosure   |                    |                              |                                 |
|  | a. Type   |                    |                              |                                 |
|  | b. Thickness of metal sheet(min)  | mm                 | 2                            |                                 |
|  | c. Degree of protection provided by the enclosure   |                    | IP4X                         |                                 |
| 3  | <b>Breaker assembly</b>   |                    |                              |                                 |
|  | a. Breaker provided with service test and withdrawn position  | Yes/No             | Yes                          |                                 |
|  | b. type of Indication provided for breaker position   |                    | LED                          |                                 |
|  | c. Cubicle door can be closed with breaker in service or test position                              | Yes/No             | Yes                          |                                 |
| 4  | Space Heater  |                    |                              |                                 |
|  | a. Thermostat controlled space heater furnished for each cubicle?                                   | Yes/No             | Yes                          |                                 |
|  | b. Ratings  |                    |                              |                                 |
|  | -Voltage  | V, AC              | 230                          |                                 |
|  | -Watts  |                    |                              |                                 |
| 5  | Overall Mechanical dimension (LXWXH)  | mm x<br>mm x<br>mm |                              |                                 |
| 6  | Approximate weight (complete panel)   |                    |                              |                                 |
| 7  | Shipping dimension(LxWxH) of complete panel   |                    |                              |                                 |
| 8  | Delivery of equipment in months following award of contract (Allowing time for approval of drawing) |                    |                              |                                 |
| 9  | Type test certificate submitted?  | Yes/No             | Yes                          |                                 |
| 10   | Has manufacturer exported units?  | Yes/No             | Yes                          |                                 |
| 11   | User's certificate submitted?   | Yes/No             | Yes                          |                                 |
| 12   | Technical literature/drawings submitted?  | Yes/No             | Yes                          |                                 |

Deviations from technical requirements:



Signed.....  
As representative for.....  
  
Address.....  
Date.....



| TECHNICAL DATA SHEET<br>(To Be Completed By the Tenderer) |   |                       |                       |  |
|---|---|-----------------------|-----------------------|--|
| ITEM No.13 11kV XLPE POWER CABLES                         |   | Sheet 1 of 1          |                       |  |
|   | DESCRIPTION   | UNIT                  | DATA to be Filled     |  |
| 1   | Manufacturer and Country of Origin  |                       |                       |  |
| 2   | Manufacturer's type designation   |                       |                       |  |
| 3   | Type  |                       | Armoured              |  |
| 4   | Applicable standard   |                       | IEC                   |  |
| 5   | Voltage rating  |                       |                       |  |
|   | a) Suitable for max. system Voltage   | kV                    | 12                    |  |
|   | b) voltage grade of this cable  | kV                    | 6/10(12)              |  |
|   | c) Rated Voltage between each conductor and screen  | kV                    | 11/√3                 |  |
|   | d) Rated Voltage between two conductors   | kV                    | 11                    |  |
| 6   | Conductor material  | Copper / Al           | Copper / Al           |  |
| 7   | Insulating material   |                       | Polyethylene          |  |
|   | Thickness   |                       |                       |  |
| 8   | Overall jacket material   |                       | PVC                   |  |
|   | Thickness   |                       |                       |  |
| 9.1   | Overall Cross sectional Area of the cable, Copper (Single Core)                                     | Sq.mm                 | 630 & 400             |  |
| 9.2   | Overall Cross sectional Area of the cable, Aluminum (Three Core)                                    | Sq.mm                 | 300                   |  |
| 10  | Type of Cable   | Single/<br>Three Core | Single/<br>Three Core |  |
| 11  | Continuous Current Rating at 45DegC Ambient Temperature in Duct                                     | A                     |                       |  |
|   | Aluminum 300 Sq.mm  | A                     |                       |  |
| 12  | Short Circuit Current rating  | kA                    | > 20                  |  |
| 13  | Fire Retardive  | Yes                   | Yes                   |  |
| 14  | Mositure Resistant  | Yes                   | Yes                   |  |
| 15  | Technical Leaflets provided   | Yes / No              | Yes                   |  |
| 16  | Delivery of equipment in months following award of contract (Allowing time for approval of drawing) | month                 |                       |  |

Deviations from technical requirements:

Signed.....

As representative for.....

Address.....

Date.....



| <b>TECHNICAL DATA SHEET</b><br><b>(To Be Completed By the Tenderer)</b> |  |          |              |                     |
|---|--|----------|--------------|---------------------|
| <b>ITEM No.14: 33kV POWER CABLES</b>                                    |  |          |              | <b>Sheet 1 of 1</b> |
|   | DESCRIPTION  | UNIT     | NEA REQ      | DATA to be Filled   |
| 1   | Manufacturer and Country of Origin   |          |              |                     |
| 2   | Year of manufacturing experience   | Years    | 10           |                     |
| 3   | Manufacturer's type designation  |          |              |                     |
| 4   | Type   |          | Armoured     |                     |
| 5   | Applicable standard  |          | IEC          |                     |
| 6   | <b>Voltage rating</b>  |          |              |                     |
|   | e) Suitable for max. system voltage  | kV       | 36           |                     |
|   | f) voltage grade of this cable   | kV       | 19/33        |                     |
|   | g) Rated voltage between each conductor and screen   | kV       | 33/√ 3       |                     |
|   | h) Rated voltage between two conductors  | kV       | 33           |                     |
| 7   | Conductor material   | copper   | copper       |                     |
| 8   | Insulating material  |          | Polyethylene |                     |
|   | Class of Standing  |          | class 2      |                     |
|   | Thickness of Conductor screen  | mm       |              |                     |
|   | Thickness of XLPE Insulation   | mm       |              |                     |
|   | Thickness of Insulation Screen   | mm       |              |                     |
|   | Thickness of Copper screen   | mm       |              |                     |
| 8   | Overall jacket material  |          | PVC          |                     |
|   | Thickness  |          |              |                     |
| 9   | Overall Cross sectional Area of the cable  | Sq.mm    | 630          |                     |
| 10  | Type of Cable  |          | Single Core  |                     |
| 11  | Continuous Current Rating at 45DegC Ambient Temperature in Duct  | A        |              |                     |
| 12  | Short Circuit Current rating   | kA       | > 20         |                     |
| 13  | Fire Retardive   | Yes      | Yes          |                     |
| 14  | Mositure Resistant   | Yes      | Yes          |                     |
| 15  | Technical Leaflets provided  | Yes / No | Yes          |                     |
| 16  | Delivery of equipment in months following award of contract<br>(Allowing time for approval of drawing) | month    |              |                     |

Deviations from technical requirements:

Signed.....

As representative for.....

Address.....

Date.....



| ITEM No.15: CONTROL CABLES |  |        | Sheet 1 of 1 |                   |
|----------------------------|--|--------|--------------|-------------------|
|                            | DESCRIPTION  | UNIT   | NEA REQ      | DATA to be Filled |
| 1                          | Manufacturer and Country of Origin   |        |              |                   |
| 2                          | Manufacturer's type designation  |        |              |                   |
| 3                          | Type   |        | Armoured     |                   |
| 4                          | Applicable standard  |        | IEC          |                   |
| 5                          | <i>Voltage rating</i><br>Suitable for max. system voltage  | V      | 1000         |                   |
|                            | voltage grade of this cable  | V      | 600/1100     |                   |
| 6                          | Conductor material   | copper |              |                   |
| 7                          | Insulating material  |        | Polyethylene |                   |
| 8                          | Overall jacket material  |        | PVC          |                   |
| 9                          | Fire Retardive   | Yes    |              |                   |
| 10                         | Mositure Resistant   | Yes    |              |                   |
| 11                         | Delivery of equipment in months following award of contract<br>(Allowing time for approval of drawing) | month  |              |                   |

Deviations from technical requirements:

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| ITEM No.16: LV POWER CABLES |  |            | Sheet 1 of 1         |                   |
|-----------------------------|--|------------|----------------------|-------------------|
|                             | DESCRIPTION  | UNIT       | NEA REQ              | DATA to be Filled |
| 1                           | Manufacturer and Country of Origin   |            |                      |                   |
| 2                           | Manufacturer's type designation  |            |                      |                   |
| 3                           | Type   |            | Armoured             |                   |
| 4                           | Applicable standard  |            | IEC                  |                   |
| 5                           | <i>Voltage rating</i><br>Suitable for max. system voltage<br><br>voltage grade of this cable           | V<br><br>V | 1000<br><br>600/1100 |                   |
| 6                           | Conductor material   | copper     |                      |                   |
| 7                           | Insulating material  |            | Polyethylene         |                   |
| 8                           | Overall jacket material  |            | PVC                  |                   |
| 9                           | Fire Retardive   | Yes        |                      |                   |
| 10                          | Mositure Resistant   | Yes        |                      |                   |
| 11                          | Delivery of equipment in months following award of contract<br>(Allowing time for approval of drawing) | month      |                      |                   |

Deviations from technical requirements:

Signed..... As representative for.....

Address..... Date.....



| ITEM No.17: GROUNDING SYSTEM |  | Sheet 1 of 1 |                   |                   |
|------------------------------|--|--------------|-------------------|-------------------|
|                              | DESCRIPTION  | UNIT         | NEA REQ.          | DATA to be Filled |
| 1                            | Main ground grid conductor material                                |              | Copper            |                   |
| 2                            | Main ground grid conductor size                                    | mm x mm      |                   |                   |
| 3                            | Depth of Buried Main Ground Conductor                              | m            |                   |                   |
| 4                            | Type of Joint above and below Ground level                         |              |                   |                   |
| 5                            | Material of Risers   |              | Copper            |                   |
|                              | Cross section of riser conductors                                  | sq. mm       | 100               |                   |
| 6                            | Ground electrode<br>-Material                                      |              | Copper clad steel |                   |
|                              | -Diameter  | mm           | 16                |                   |
|                              | -Length  | meter        | as per IEEE 80    |                   |
| 7                            | Fence Grounding included   |              |                   |                   |
| 8                            | Cross Section of Conductor Rise for Fence Grd                      | Sq.mm        |                   |                   |
| 9                            | Fence Separately Grounded by Electrode                             | Yes/ No      | Yes               |                   |
| 10                           | Calculation for Grounding Grid Length and Conductor Size Furnished | Yes/No       | Yes               |                   |
| 11                           | Earthing system designed for                                       | Ohm          | ≤1                |                   |

Deviations from technical requirements:

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**TECHNICAL DATA SHEET**  
(To Be Completed By the Tenderer)

**ITEM No.18: MISCELLANEOUS MATERIALS**

**Sheet 1 of 2**

|          | DESCRIPTION   | UNIT     | NEA REQ. | DATA to be Filled |
|----------|---|----------|----------|-------------------|
| <b>A</b> | <b>Strain Bus and Fittings</b>                              |          | N/A      |                   |
| 1        | Manufacturer and Country of Origin                          |          |          |                   |
| 2        | Nominal Sectional Area                                      |          |          |                   |
| 3        | Nos. and Size of Wire<br>i. Aluminium<br>ii. Steel          |          |          |                   |
| 4        | Overall diameter<br>i. Steel Core<br>ii. Complete Conductor |          |          |                   |
| 5        | Ultimate Tensile Strength                                   |          |          |                   |
| 6        | Continuos Current at 45Deg C                                |          |          |                   |
| 7        | Short Circuit Current, 1S                                   |          |          |                   |
| 8        | Resistance  |          |          |                   |
| 9        | Weight  |          |          |                   |
| <b>B</b> | <b>Fittings</b>   |          |          |                   |
| 1        | Manufacturer and Country of Origin                          |          |          |                   |
| 2        | Material  |          |          |                   |
| <b>C</b> | <b>Suspension / Tension Insulators</b>                      |          |          |                   |
| 1        | Manufacturer and Country of Origin                          |          |          |                   |
| 2        | Manufacturer's type designation                             |          |          |                   |
| 3        | Applicable standard   |          |          |                   |
| 4        | Size<br>- Diameter<br>- Height                              | mm<br>mm |          |                   |
| 5        | Number of units per string                                  | No.      |          |                   |
| 6        | Combined electrical and mechanical failing load             | kg       |          |                   |
| 7        | Creepage distance per unit                                  | mm       |          |                   |
| 8        | Impulse withstand voltage                                   | kV       |          |                   |
| 9        | Dry power frequency withstand voltage                       | kV       |          |                   |
| 10       | Wet power frequency withstand test                          | kV       |          |                   |
| 11       | Puncture voltage  | kV       |          |                   |
| 12       | Technical literature submitted                              | Yes/No   |          |                   |
| <b>D</b> | <b>Post Insulator</b>                                       |          |          |                   |
| 1        | Manufacturer and Country of Origin                          |          |          |                   |
| 2        | Manufacturer's type designation                             |          |          |                   |
| 3        | Applicable standard   |          |          |                   |
| 4        | Rated system voltage  | kV       |          |                   |
| 5        | Maximum rated voltage                                       | kV       |          |                   |
| 6        | Unit size (Diameter)  | mm       |          |                   |
| 7        | Unit size (Length)  | mm       |          |                   |
| 8        | Creepage distance   | mm       |          |                   |



| <b>TECHNICAL DATA SHEET</b><br>(To Be Completed By the Tenderer) |   |             |                     |                          |
|--|---|-------------|---------------------|--------------------------|
| <b>ITEM No.18: MISCELLANEOUS MATERIALS</b>                       |   |             | <b>Sheet 2 of 2</b> |                          |
|  | <b>DESCRIPTION</b>  | <b>UNIT</b> | <b>NEA REQ.</b>     | <b>DATA to be Filled</b> |
| 9  | Insulation level<br>a) Impulse withstand voltage<br>b) Power frequency withstand voltage (1min rms) | kV<br>kV    |                     |                          |
| 10   | Failing load(bending)   | kg          |                     |                          |
| 11   | Failing load(torsion)   | kg-m        |                     |                          |
| 12   | Technical literature submitted  | Yes/No      |                     |                          |
| <b>E</b>   | <b>ACSR Conductor</b>   |             |                     |                          |
| 1  | Manufacturer and Country of Origin  |             |                     |                          |
| 2  | Manufacturer's type designation   |             |                     |                          |
| 3  | Applicable standard   |             |                     |                          |
| 4  | Unit size (Diameter x no of strands)  |             |                     |                          |
| 5  | Overall Cross sectional area  |             |                     |                          |
| 6  | Technical literature submitted  | Yes/No      | Yes                 |                          |
| <b>F</b>   | <b>Tubular Bus of Aluminium</b>   |             |                     |                          |
| 1  | Manufacturer and Country of Origin  |             |                     |                          |
| 2  | Type of Round Tube  |             |                     |                          |
| 3  | Rated Voltage   | kV          | 132                 |                          |
| 4  | Continuous Current at 45Deg C   | A           | 2000                |                          |
| 5  | Minimum 0.2% proof stress (yield strength)kg/mm2  |             |                     |                          |
| 6  | Minimum % Elongation on 50 mm gauge length  |             |                     |                          |
| 7  | Material & grade  |             |                     |                          |
| 8  | Minimum Electrical Conductivity   |             |                     |                          |
| 9  | Cross Sectional Area  | mm sq       |                     |                          |
| 10   | Outside Diameter  | mm          |                     |                          |
| 11   | Wall Thickness  | mm          |                     |                          |
| 12   | Ultimate Tensile Strength   |             |                     |                          |
| 13   | Short Circuit Current, 1S   |             |                     |                          |
| 14   | Resistance  |             |                     |                          |
| 15   | Weight per meter length   |             |                     |                          |
| 16   | Technical literature submitted  | Yes/No      | Yes                 |                          |
| <b>G</b>   | <b>Tubular Bus of Aluminium</b>   |             |                     |                          |
| 1  | Manufacturer and Country of Origin  |             |                     |                          |
| 2  | Type of Round Tube  |             |                     |                          |
| 3  | Rated Voltage   | kV          | 33                  |                          |
| 4  | Continuous Current at 45Deg C   | A           | 2500                |                          |
| 5  | Minimum 0.2% proof stress (yield strength)kg/mm2  |             |                     |                          |



|          |  |        |         |  |
|----------|--|--------|---------|--|
| 6        | Minimum % Elongation on 50 mm gauge length |        |         |  |
| 7        | Material & grade                           |        |         |  |
| 8        | Minimum Electrical Conductivity            |        |         |  |
| 9        | Cross Sectional Area                       | mm sq  |         |  |
| 10       | Outside Diameter                           | mm     |         |  |
| 11       | Wall Thickness                             | mm     |         |  |
| 12       | Ultimate Tensile Strength                  |        |         |  |
| 13       | Short Circuit Current, 1S                  |        |         |  |
| 14       | Resistance                                 |        |         |  |
| 15       | Weight per meter length                    |        |         |  |
| 16       | Technical literature submitted             | Yes/No | Yes     |  |
| <b>H</b> | <b>Earth Wire</b>                          |        |         |  |
| 1        | Manufacturer and Country of Origin         |        |         |  |
| 2        | Manufacturer's type designation            |        |         |  |
| 3        | Applicable standard                        |        |         |  |
| 4        | Unit size (Diameter x no of strands)       | mm/Nos | 10.05/7 |  |
| 5        | Overall Cross sectional area               | Sq.mm  | 61.7    |  |
| 6        | Technical literature submitted             | Yes/No | Yes     |  |

Deviations from technical requirements

Signed.....As representative for.....  
Address.....Date.....



# NEPAL ELECTRICITY AUTHORITY

(An Undertaking of Government of Nepal)

**TRANSMISSION DIRECTORATE**

**GRID OPERATION DEPARTMENT**



**BID DOCUMENT**  
**INTERNATIONAL COMPETITIVE BIDDING (ICB)**  
(PRICE SCHEDULE)  
**VOLUME –III OF III**

SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING  
OF  
POWER TRANSFORMERS AT VARIOUS  
SUBSTATIONS

**TENDER NO: GOD/2078/079-14**

---

Nepal Electricity Authority  
Grid Operation Department  
Meen Bhawan, New Baneshwor  
Kathmandu  
Tel. : + 977 (01) 4106919, 4106782, 4106965  
Email: [gridoperation@nea.org.np](mailto:gridoperation@nea.org.np)

APRIL 2022

# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations

(Schedules of Rates and Prices)

Tender No. GOD/2078/079-06

#### GENERAL SUMMARY

| Package 1 | Description          | Total Amount |    |
|-----------|----------------------|--------------|----|
|           |                      | FC           | LC |
| 1         | Kohalpur             |              |    |
| 2         | Lamki                |              |    |
| 3         | Pokhara              |              |    |
| 4         | Transformer Shifting |              |    |
| 5         | Lahan                |              |    |
| 6         | Dhalkebar            |              |    |
| 7         | Chapur               |              |    |
| 8         | Chanauta             |              |    |
| 9         | Butwal               |              |    |
| 10        | Gandak               |              |    |
| 11        | Kawasoti             |              |    |
| 12        | Piluwa               |              |    |
| 13        | Kamane               |              |    |
|           | <i>Grand Total</i>   |              |    |

Name of Bidder \_\_\_\_\_

Signature of Bidder \_\_\_\_\_

# Price Schedules

**Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation**

## PREAMBLE

### A. General

|                   |  |
|-------------------|--|
| 1                 | <b>The Price Schedules are divided into separate Schedules as follows:</b>   |
| Schedule No. 1:   | Plant and Mandatory Spare Parts Supplied from Abroad   |
| Schedule No. 2:   | Plant and Mandatory Spare Parts Supplied from within the Employer's Country  |
| Schedule No. 3:   | Design Services (Not Applicable)   |
| Schedule No. 4:   | Installation and Other Services  |
| Schedule No. 5:   | Grand Summary  |
| Schedule No. 6:   | Recommended Spare Parts  |
| 2                 | The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.  |
| 3                 | If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.   |
| <b>B. Pricing</b> |  |
| 4                 | The units and rates in figures entered into the Price Schedules should be type written or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.<br>As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement. |
| 5                 | Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.<br>For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.<br>Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.   |
| 6                 | When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.  |
| 7                 | Bidders are instructed to quote the price schedule no. 1 (Plant, and Mandatory Spares Parts supplied from abroad) either in foreign currency (USD) or Nepalese Rupees (NRs.) and rest price schedule Price Schedule 2 (Plant, and Mandatory Spares Parts supplied Within Employer's Country) and Price Schedule No 4 (Installation Services) entirely in Nepalese Rupees (NRs).  |





**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit  | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|-------|----------|--|--------------|---------|
|          |   |                   |          |       |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)   |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |                   |          |       |          |  |              |         |
| <b>1</b> | <b>Main Items</b>   |                   |          |       |          |  |              |         |
| 1.1      | 132/33kV, 100 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified                 |                   | 2        | Set   |          |  |              |         |
| 1.2      | 132kV, Outdoor SF6 Circuit Breaker, three Pole type Complete with all accessories and Steel Structure as specified  |                   | 1        | Set   |          |  |              |         |
| 1.3      | 33 kV, Outdoor VCB, three Pole type Complete with all accessories and steel structure as specified  |                   | 2        | Set   |          |  |              |         |
| 1.4      | 33kV Disconnecting Switch with Earthing Switch complete with all accessories as specified   |                   | 2        | Set   |          |  |              |         |
| 1.5      | 33kV Current Transformer with all accessories as specified  |                   | 6        | Nos.  |          |  |              |         |
| 1.6      | 33kV Lightning Arrestors with all accessories, as specified   |                   | 6        | Nos   |          |  |              |         |
| 1.7      | 33kV Line Control & Relay Panel, complete with all accessories as per specification(as per existing type)   |                   | 6        | Set   |          |  |              |         |
| 1.8      | 33 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 33 kV Side                     |                   | 1200     | Meter |          |  |              |         |
| 1.9      | 600 V Control Cable and Power Cable required for 132/33kV, 100MVA Power Transformer, to complete the scope of work as specified                               |                   | 1        | Lot   |          |  |              |         |
| 1.10     | 33/11kV, 20/24 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified           |                   | 2        | Set   |          |  |              |         |
| 1.11     | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 11 kV Side (2 Cable per phase) |                   | 2500     | Metre |          |  |              |         |
| 1.12     | 11 kV,300 sq. mm three core XLPE Aluminium Power Cable including terminal Joints for both end with all accessories complete for 6 nos of 11 kV feeder         |                   | 1500     | Metre |          |  |              |         |
| 1.13     | 600 V Control Cable and Power Cable required for 33/11kV 24MVA Power Transformer, to complete the scope of work as specified                                  |                   | 2        | Lot   |          |  |              |         |
|          | <b>Sub Total (1)</b>  |                   |          |       |          |  |              |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |                   |          |       |          |  |              |         |
| 2.1      | ACSR conductors of suitable size for 33kV Bus Bar Extension   |                   | 1        | Lots  |          |  |              |         |
| 2.2      | Insulator Strings for both 33kV Side with all accessories to complete the scope of works  |                   | 1        | Lots  |          |  |              |         |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 2.3      | ACSR Bear conductors with connector / accessories for 33kV including 33kV Incomer Bay and 33/11kV Transformer Bay with all accessories to complete the scope of works   |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (2)</b>  |                   |          |      |          |  |              |         |
| <b>3</b> | <b>Grounding System</b>   |                   |          |      |          |  |              |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete for 132/33kV Power Transformer and Bay equipments works |                   | 2        | Lots |          |  |              |         |
| 3.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories for 132/33kV Power Transformer Bay to complete the specified scope of works                                      |                   | 1        | Lots |          |  |              |         |
| 3.3      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete for 33/11kV Power Transformer and Bay equipments works  |                   | 2        | Lots |          |  |              |         |
| 3.4      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories for 33/11kV Power Transformer Bay to complete the specified scope of works                                       |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (3)</b>  |                   |          |      |          |  |              |         |
| <b>4</b> | <b>Illumination System</b>  |                   |          |      |          |  |              |         |
| 4.1      | Switchyard Lighting for 132/33kV Power Transformer Bays as specified, Lot   |                   | 1        | Lots |          |  |              |         |
| 4.2      | Switchyard Lighting for 33/11kV Power Transformer Bays as specified, Lot  |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (4)</b>  |                   |          |      |          |  |              |         |
|          | <b>Total of Electrical Part (A)</b>   |                   |          |      |          |  |              |         |
| <b>B</b> | <b>Civil Part</b>   |                   |          |      |          |  |              |         |
| <b>5</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories:  |                   |          |      |          |  |              |         |
| 5.1      | 33kV Disconnecting Switch   |                   | 2        | Lots |          |  |              |         |
| 5.2      | 33kV Current transformer  |                   | 6        | Lots |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description  | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 5.3      | 33kV Lightening Arrestor                                     |                   | 6        | Lots |          |  |              |         |
|          | <b>Sub Total (5)</b>   |                   |          |      |          |  |              |         |
|          | <b>Total of Civil Part (B)</b>                               |                   |          |      |          |  |              |         |
| <b>C</b> | <b>Spare Part</b>  |                   |          |      |          |  |              |         |
| <b>6</b> | <b>For 132/33kV, 100MVA Power Transformer</b>                |                   |          |      |          |  |              |         |
| 6.1      | 132kV Phase Bushing, 33kV Bushing & Neutral Bushing (1 each) |                   | 1        | Set  |          |  |              |         |
| 6.2      | Dial Type Thermometer (OTI, WTI 1each)                       |                   | 1        | set  |          |  |              |         |
| 6.3      | Oil Level Gauge  |                   | 1        | set  |          |  |              |         |
| 6.4      | Indicating lamps (100% of used), Lot                         |                   | 1        | lot  |          |  |              |         |
| 6.5      | All Types of Fuses (100% of used), Lot                       |                   | 1        | lot  |          |  |              |         |
| 6.6      | Complete Set of Gaskets                                      |                   | 1        | lot  |          |  |              |         |
| 6.7      | Complete set of Pressure Relief Device                       |                   | 1        | set  |          |  |              |         |
| 6.8      | One BCT of each type   |                   | 1        | Lot  |          |  |              |         |
| 6.9      | Cooler Control Contactors                                    |                   | 1        | Lot  |          |  |              |         |
| 6.10     | OLTC Motor Contactor, Nos                                    |                   | 1        | Nos  |          |  |              |         |
| 6.11     | Complete set of Bucholz Relay                                |                   | 1        | set  |          |  |              |         |
|          | <b>Sub Total of (6)</b>                                      |                   |          |      |          |  |              |         |
| <b>7</b> | <b>For 33/11kV, 24MVA Power Transformer</b>                  |                   |          |      |          |  |              |         |
| 7.1      | 33kV Phase Bushing, 11kV Bushing & Neutral Bushing (1 each)  |                   | 2        | Sets |          |  |              |         |
| 7.2      | Dial Type Thermometer (OTI, WTI 1each)                       |                   | 2        | Nos  |          |  |              |         |
| 7.3      | Oil Level Gauge  |                   | 2        | Nos  |          |  |              |         |
| 7.4      | Indicating lamps (100% of used), Lot                         |                   | 2        | Lot  |          |  |              |         |
| 7.5      | All Types of Fuses (100% of used)                            |                   | 2        | Lot  |          |  |              |         |
| 7.6      | Complete Set of Gaskets                                      |                   | 2        | Set  |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 7.7      | Complete set of Pressure Relief Device                            |                   | 2        | Set  |          |  |              |         |
| 7.8      | One BCT of each type  |                   | 2        | Nos  |          |  |              |         |
| 7.9      | Cooler Control Contactors   |                   | 2        | Nos  |          |  |              |         |
| 7.10     | OLTC Motor Contactor  |                   | 2        | Nos  |          |  |              |         |
| 7.11     | Complete set of Bucholz Relay                                     |                   | 2        | Set  |          |  |              |         |
|          | <b>Sub Total of (7)</b>   |                   |          |      |          |  |              |         |
| 8        | <b>For 132kV SF6 Circuit Breaker</b>                              |                   |          |      |          |  |              |         |
| 8.1      | Tripping Coils, Nos   |                   | 3        | Nos. |          |  |              |         |
| 8.2      | Closing Coils, Nos  |                   | 2        | Nos. |          |  |              |         |
| 8.3      | Pressure Switches, Relays and Contactors (One of each type), Sets |                   | 2        | Sets |          |  |              |         |
| 8.4      | Motor for Mechanism, Set  |                   | 2        | Sets |          |  |              |         |
| 8.5      | Complete Sets of O-rings and Gaskets                              |                   | 1        | Sets |          |  |              |         |
| 8.6      | SF6 Gas filling Nozzle & Adaptor                                  |                   | 1        | Lot  |          |  |              |         |
|          | <b>Sub Total of (8)</b>   |                   |          |      |          |  |              |         |
| 9        | <b>For 33kV Vacuum Circuit Breaker</b>                            |                   |          |      |          |  |              |         |
| 9.1      | Tripping Coils, Nos   |                   | 3        | Nos  |          |  |              |         |
| 9.2      | Closing Coils, Nos  |                   | 2        | Nos  |          |  |              |         |
| 9.3      | Relays and Contactors (One of each type), Sets                    |                   | 2        | Sets |          |  |              |         |
| 9.4      | Motor for Mechanism, Set  |                   | 3        | Sets |          |  |              |         |
| 9.5      | Interrupter for VCB, No   |                   | 2        | Nos  |          |  |              |         |
|          | <b>Sub Total of (9)</b>   |                   |          |      |          |  |              |         |
| 10       | <b>For 33kV Disconnecting Switches</b>                            |                   |          |      |          |  |              |         |
| 10.1     | Main contact assemblies, Set                                      |                   | 2        | Sets |          |  |              |         |
| 10.2     | Auxiliary contacts, Set   |                   | 2        | Sets |          |  |              |         |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description  | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 10.3     | Interlocking coil, Set   |                   | 2        | Sets |          |  |              |         |
|          | <b>Sub Total of (10)</b>   |                   |          |      |          |  |              |         |
| 11       | <b>For Control and Relay Panel</b>                                     |                   |          |      |          |  |              |         |
| 11.1     | Indicating Lamps(100% of used), Lot                                    |                   | 1        | Lot  |          |  |              |         |
| 11.2     | Fuses of each type(100% of used), Lot                                  |                   | 1        | Lot  |          |  |              |         |
| 11.3     | Color caps for each color for indicating lamps(20% of used), Lot       |                   | 1        | Lot  |          |  |              |         |
| 11.4     | One of each type of Switch, Relay, Timer and other Special Device, Lot |                   | 1        | Lot  |          |  |              |         |
| 11.5     | Each type of Auxiliary Relays(1each), Lot                              |                   | 1        | Lot  |          |  |              |         |
| 11.6     | <b>Protection Relays</b>   |                   |          |      |          |  |              |         |
| 11.6.1   | 3 Phase over current relays, Set                                       |                   | 1        | Sets |          |  |              |         |
| 11.6.2   | Ground Fault Relays(1each), No.  |                   |          |      |          |  |              |         |
| 11.6.3   | Tripping Control Circuit Relays, No                                    |                   | 1        | Nos  |          |  |              |         |
| 11.7     | Ammeter(1 each), No  |                   | 1        | Nos  |          |  |              |         |
| 11.8     | MVA Meter, No  |                   | 1        | Nos  |          |  |              |         |
| 11.9     | Volt meter (1 Each), No  |                   | 1        | Nos  |          |  |              |         |
|          | <b>Sub Total of (11)</b>   |                   |          |      |          |  |              |         |
|          | <b>Total of Spare Part (C)</b>   |                   |          |      |          |  |              |         |
|          | <b>Grand Total of Schedule 1</b>                                       |                   |          |      |          |  |              |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

|      |  |
|------|--|
| Note | The prices shall be quoted either in the currency of Nepalese Rupees (NRs.) or foreign currency (USD) only as per ITB 19.1 of the BDS. |
|------|--|




**Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation**

1. If a Bidder wishes to Supply some item(s) listed in Price Schedule no. 1 from manufacturing plant in Nepal, then such item(s) and price of such item(s) shall be quoted in this Price Schedule no. 2 only. Columns against such item(s) shall be left blank in Price Schedule no. 1.
2. Item No. in the following table shall match those in Price Schedule no. 1

### Price Schedule 2. Plant, and Mandatory Spares Parts supplied Within Employer's Country

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**

**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation**

**Price Schedule No 3: Design Services**

| Item | Description  | Qty.                  | Unit Price <sup>#</sup>      |  | Total Price <sup>#</sup> |                                       |
|------|--|-----------------------|------------------------------|--|--------------------------|---------------------------------------|
|      |  |                       | Local<br>Currency<br>Portion | Foreign<br>Currency<br>Portion<br>(optional) | LocalCurrency<br>Portion | Foreign currency<br>Portion(optional) |
| (1)  | (2)  | (3)                   | (4)                          | (5)  | (6)=(4)x(3)              | (7)=(5)x(3)                           |
|      | The scope of the Contract covers the detail design as well. The price of the detail design is deemed to have been covered in the prices of the other schedules | <b>Not Applicable</b> |                              |  |                          |                                       |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit  | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|-------|--|--------------------|---------|
|          |   |          |       | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)   | (5)  | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |       |  |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |       |  |                    |         |
| 1.1      | 132/33kV, 100 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified                 | 2        | Set   |  |                    |         |
| 1.2      | 132kV, Outdoor SF6 Circuit Breaker, three Pole type Complete with all accessories and Steel Structure as specified  | 1        | Set   |  |                    |         |
| 1.3      | 33 kV, Outdoor VCB, three Pole type Complete with all accessories and steel structure as specified  | 2        | Set   |  |                    |         |
| 1.4      | 33kV Disconnecting Switch with Earthing Switch complete with all accessories as specified   | 2        | Set   |  |                    |         |
| 1.5      | 33kV Current Transformer with all accessories as specified  | 6        | Nos.  |  |                    |         |
| 1.6      | 33kV Lightning Arrestors with all accessories, as specified   | 6        | Nos   |  |                    |         |
| 1.7      | 33kV Line Control & Relay Panel, complete with all accessories as per specification(as per existing type)   | 6        | Set   |  |                    |         |
| 1.8      | 33 kV, 630 sq. mm <b>single</b> core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 33 kV Side              | 1200     | Meter |  |                    |         |
| 1.9      | 600 V Control Cable and Power Cable required for 132/33kV, 100MVA Power Transformer, to complete the scope of work as specified                               | 1        | Lot   |  |                    |         |
| 1.10     | 33/11kV, 20/24 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified           | 2        | Set   |  |                    |         |
| 1.11     | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 11 kV Side (2 Cable per phase) | 2500     | Metre |  |                    |         |
| 1.12     | 11 kV, 300 sq. mm three core XLPE Aluminium Power Cable including terminal Joints for both end with all accessories complete for 6 nos of 11 kV feeder        | 1500     | Metre |  |                    |         |






# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|------|--|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 1.13     | 600 V Control Cable and Power Cable required for 33/11kV 24MVA Power Transformer, to complete the scope of work as specified  | 2        | Lot  |  |                    |         |
|          | <b>Sub Total (1)</b>  |          |      |  |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |      |  |                    |         |
| 2.1      | ACSR conductors of suitable size for 33kV Bus Bar Extension   | 1        | Lots |  |                    |         |
| 2.2      | Insulator Strings for both 33kV Side with all accessories to complete the scope of works  | 1        | Lots |  |                    |         |
| 2.3      | ACSR Bear conductors with connector / accessories for 33kV including 33kV Incomer Bay and 33/11kV Transformer Bay with all accessories to complete the scope of works   | 2        | Lots |  |                    |         |
|          | <b>Sub Total (2)</b>  |          |      |  |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |      |  |                    |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete for 132/33kV Power Transformer and Bay equipments works | 2        | Lots |  |                    |         |
| 3.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories for 132/33kV Power Transformer Bay to complete the specified scope of works                                      | 1        | Lots |  |                    |         |
| 3.3      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete for 33/11kV Power Transformer and Bay equipments works  | 2        | Lots |  |                    |         |
| 3.4      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories for 33/11kV Power Transformer Bay to complete the specified scope of works                                       | 1        | Lots |  |                    |         |
|          | <b>Sub Total (3)</b>  |          |      |  |                    |         |
| <b>4</b> | <b>Illumination System</b>  |          |      |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 4.1      | Switchyard Lighting for 132/33kV Power Transformer Bays as specified, Lot                                    | 1        | Lots |  |                    |         |
| 4.2      | Switchyard Lighting for 33/11kV Power Transformer Bays as specified, Lot                                     | 1        | Lots |  |                    |         |
|          | <b>Sub Total (4)</b>   |          |      |  |                    |         |
|          | <b>Total of Electrical Part (A)</b>  |          |      |  |                    |         |
| <b>B</b> | <b>Civil Part</b>  |          |      |  |                    |         |
| <b>4</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories: |          |      |  |                    |         |
| 4.1      | 33kV Disconnecting Switch  | 2        | Lots |  |                    |         |
| 4.2      | 33kV Current transformer   | 6        | Lots |  |                    |         |
| 4.3      | 33kV Lightning Arrestor  | 6        | Lots |  |                    |         |
|          | <b>Sub Total (4)</b>   |          |      |  |                    |         |
|          | <b>Total of Civil Part (B)</b>   |          |      |  |                    |         |
| <b>C</b> | <b>Spare Part</b>  |          |      |  |                    |         |
| <b>5</b> | <b>For 132/33kV, 100MVA Power Transformer</b>  |          |      |  |                    |         |
| 5.1      | 132kV Phase Bushing, 33kV Bushing & Neutral Bushing (1 each)   | 1        | Set  |  |                    |         |
| 5.2      | Dial Type Thermometer (OTI, WTI 1each)   | 1        | set  |  |                    |         |
| 5.3      | Oil Level Gauge  | 1        | set  |  |                    |         |
| 5.4      | Indicating lamps (100% of used), Lot   | 1        | lot  |  |                    |         |
| 5.5      | All Types of Fuses (100% of used), Lot   | 1        | lot  |  |                    |         |
| 5.6      | Complete Set of Gaskets  | 1        | lot  |  |                    |         |
| 5.7      | Complete set of Pressure Relief Device   | 1        | set  |  |                    |         |
| 5.8      | One BCT of each type   | 1        | Lot  |  |                    |         |
| 5.9      | Cooler Control Contactors  | 1        | Lot  |  |                    |         |
| 5.10     | OLTC Motor Contactor, Nos  | 1        | Nos  |  |                    |         |
| 5.11     | Complete set of Bucholz Relay  | 1        | set  |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|------|--|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
|          | <b>Sub Total of (5)</b>   |          |      |  |                    |         |
| 6        | <b>For 33/11kV, 24MVA Power Transformer</b>                       |          |      |  |                    |         |
| 6.1      | 33kV Phase Bushing, 11kV Bushing & Neutral Bushing (1 each)       | 2        | Sets |  |                    |         |
| 6.2      | Dial Type Thermometer (OTI, WTI 1each)                            | 2        | Nos  |  |                    |         |
| 6.3      | Oil Level Gauge   | 2        | Nos  |  |                    |         |
| 6.4      | Indicating lamps (100% of used), Lot                              | 2        | Lot  |  |                    |         |
| 6.5      | All Types of Fuses (100% of used)                                 | 2        | Lot  |  |                    |         |
| 6.6      | Complete Set of Gaskets   | 2        | Set  |  |                    |         |
| 6.7      | Complete set of Pressure Relief Device                            | 2        | Set  |  |                    |         |
| 6.8      | One BCT of each type  | 2        | Nos  |  |                    |         |
| 6.9      | Cooler Control Contactors   | 2        | Nos  |  |                    |         |
| 6.10     | OLTC Motor Contactor  | 2        | Nos  |  |                    |         |
| 6.11     | Complete set of Bucholz Relay                                     | 2        | Set  |  |                    |         |
|          | <b>Sub Total of (6)</b>   |          |      |  |                    |         |
| 7        | <b>For 132kV SF6 Circuit Breaker</b>                              |          |      |  |                    |         |
| 7.1      | Tripping Coils, Nos   | 3        | Nos. |  |                    |         |
| 7.2      | Closing Coils, Nos  | 2        | Nos. |  |                    |         |
| 7.3      | Pressure Switches, Relays and Contactors (One of each type), Sets | 2        | Sets |  |                    |         |
| 7.4      | Motor for Mechanism, Set  | 2        | Sets |  |                    |         |
| 7.5      | Complete Sets of O-rings and Gaskets                              | 1        | Sets |  |                    |         |
| 7.6      | SF6 Gas filling Nozzle & Adaptor                                  | 1        | Lot  |  |                    |         |
|          | <b>Sub Total of (7)</b>   |          |      |  |                    |         |
| 8        | <b>For 33kV Vacuum Circuit Breaker</b>                            |          |      |  |                    |         |
| 8.1      | Tripping Coils, Nos   | 3        | Nos  |  |                    |         |
| 8.2      | Closing Coils, Nos  | 2        | Nos  |  |                    |         |
| 8.3      | Relays and Contactors (One of each type), Sets                    | 2        | Sets |  |                    |         |
| 8.4      | Motor for Mechanism, Set  | 3        | Sets |  |                    |         |
| 8.5      | Interrupter for VCB, No   | 2        | Nos  |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations

#### (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation

### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
|          | <b>Sub Total of (8)</b>  |          |      |  |                    |         |
| 9        | <b>For 33kV Disconnecting Switches</b>                                 |          |      |  |                    |         |
| 9.1      | Main contact assemblies, Set   | 2        | Sets |  |                    |         |
| 9.2      | Auxiliary contacts, Set  | 2        | Sets |  |                    |         |
| 9.3      | Interlocking coil, Set   | 2        | Sets |  |                    |         |
|          | <b>Sub Total of (9)</b>  |          |      |  |                    |         |
| 10       | <b>For Control and Relay Panel</b>                                     |          |      |  |                    |         |
| 10.1     | Indicating Lamps(100% of used), Lot                                    | 1        | Lot  |  |                    |         |
| 10.2     | Fuses of each type(100% of used), Lot                                  | 1        | Lot  |  |                    |         |
| 10.3     | Color caps for each color for indicating lamps(20% of used), Lot       | 1        | Lot  |  |                    |         |
| 10.4     | One of each type of Switch, Relay, Timer and other Special Device, Lot | 1        | Lot  |  |                    |         |
| 10.5     | Each type of Auxiliary Relays(1each), Lot                              | 1        | Lot  |  |                    |         |
| 10.6     | <b>Protection Relays</b>   |          |      |  |                    |         |
| 10.6.1   | 3 Phase over current relays, Set                                       | 1        | Sets |  |                    |         |
| 10.6.2   | Ground Fault Relays(1each), No.  |          |      |  |                    |         |
| 10.6.3   | Tripping Control Circuit Relays, No                                    | 1        | Nos  |  |                    |         |
| 10.7     | Ammeter(1 each), No  | 1        | Nos  |  |                    |         |
| 10.8     | MVA Meter, No  | 1        | Nos  |  |                    |         |
| 10.9     | Volt meter (1 Each), No  | 1        | Nos  |  |                    |         |
|          | <b>Sub Total of (10)</b>   |          |      |  |                    |         |
|          | <b>Total of Spare Part (C)</b>   |          |      |  |                    |         |
|          | <b>Grand Total of Schedule 4A</b>                                      |          |      |  |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations

#### (Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit  | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|-------|--------------------------------|--------------------|---------|
|          |   |          |       | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)   | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |       |                                |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |       |                                |                    |         |
| 1.1      | 132/33kV, 100 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified                 | 2        | Set   |                                |                    |         |
| 1.2      | 132kV, Outdoor SF6 Circuit Breaker, three Pole type Complete with all accessories and Steel Structure as specified  | 1        | Set   |                                |                    |         |
| 1.3      | 33 kV, Outdoor VCB, three Pole type Complete with all accessories and steel structure as specified  | 2        | Set   |                                |                    |         |
| 1.4      | 33kV Disconnecting Switch with Earthing Switch complete with all accessories as specified   | 2        | Set   |                                |                    |         |
| 1.5      | 33kV Current Transformer with all accessories as specified  | 6        | Nos.  |                                |                    |         |
| 1.6      | 33kV Lightening Arrestors with all accessories, as specified  | 6        | Nos   |                                |                    |         |
| 1.7      | 33kV Line Control & Relay Panel, complete with all accessories as per specification(as per existing type)   | 6        | Set   |                                |                    |         |
| 1.8      | 33 kV, 630 sq. mm <b>single</b> core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 33 kV Side              | 1200     | Meter |                                |                    |         |
| 1.9      | 600 V Control Cable and Power Cable required for 132/33kV, 100MVA Power Transformer, to complete the scope of work as specified                               | 1        | Lot   |                                |                    |         |
| 1.10     | 33/11kV, 20/24 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified           | 2        | Set   |                                |                    |         |
| 1.11     | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 11 kV Side (2 Cable per phase) | 2500     | Metre |                                |                    |         |
| 1.12     | 11 kV,300 sq. mm three core XLPE Aluminium Power Cable including terminal Joints for both end with all accessories complete for 6 nos of 11 kV feeder         | 1500     | Metre |                                |                    |         |
| 1.13     | 600 V Control Cable and Power Cable required for 33/11kV 24MVA Power Transformer, to complete the scope of work as specified                                  | 2        | Lot   |                                |                    |         |
|          | <b>Sub Total (1)</b>  |          |       |                                |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |       |                                |                    |         |
| 2.1      | ACSR conductors of suitable size for 33kV Bus Bar Extension   | 1        | Lots  |                                |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations

#### (Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|------|--------------------------------|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)                            | (6)=(3)x(5)        | (7)     |
| 2.2      | Insulator Strings for both 33kV Side with all accessories to complete the scope of works  | 1        | Lots |                                |                    |         |
| 2.3      | ACSR Bear conductors with connector / accessories for 33kV including 33kV Incomer Bay and 33/11kV Transformer Bay with all accessories to complete the scope of works   | 2        | Lots |                                |                    |         |
|          | <b>Sub Total (2)</b>  |          |      |                                |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |      |                                |                    |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete for 132/33kV Power Transformer and Bay equipments works | 2        | Lots |                                |                    |         |
| 3.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories for 132/33kV Power Transformer Bay to complete the specified scope of works                                      | 1        | Lots |                                |                    |         |
| 3.3      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete for 33/11kV Power Transformer and Bay equipments works  | 2        | Lots |                                |                    |         |
| 3.4      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories for 33/11kV Power Transformer Bay to complete the specified scope of works                                       | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (3)</b>  |          |      |                                |                    |         |
| <b>4</b> | <b>Illumination System</b>  |          |      |                                |                    |         |
| 4.1      | Switchyard Lighting for 132/33kV Power Transformer Bays as specified, Lot   | 1        | Lots |                                |                    |         |
| 4.2      | Switchyard Lighting for 33/11kV Power Transformer Bays as specified, Lot  | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (4)</b>  |          |      |                                |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |      |                                |                    |         |
|          | <b>Grand Total of Schedule 4B</b>   |          |      |                                |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No. | Description  | Quantity | Unit  | Civil Works (Excluding Taxes) |                    | Remarks |
|----------|--|----------|-------|-------------------------------|--------------------|---------|
|          |  |          |       | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)   | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Civil Works</b>   |          |       |                               |                    |         |
| <b>1</b> | <b>Steel Structure &amp; Rail</b>  |          |       |                               |                    |         |
| 1.1      | 33kV Disconnecting Switch  | 2        | Lots  |                               |                    |         |
| 1.2      | 33kV Current transformer   | 6        | Lots  |                               |                    |         |
| 1.3      | 33kV Lightening Arrestor   | 6        | Lots  |                               |                    |         |
|          | <b>Sub Total (1)</b>   |          |       |                               |                    |         |
| <b>2</b> | <b>Preliminary work</b>  |          |       |                               |                    |         |
| 2.1      | Clearing and Stripping   | 1        | Lots  |                               |                    |         |
| 2.2      | Site Grading, leveling   | 1        | Lots  |                               |                    |         |
|          | <b>Sub Total (2)</b>   |          |       |                               |                    |         |
| <b>3</b> | <b>Reinforced Cement Concrete Foundation for Steel Structures</b> complete excavation, backfilling, forms, concrete works and reinforcement bars |          |       |                               |                    |         |
| 3.1      | Modification of Foundation for Transformer with Rail for the load of 100 MVA Power Transformer   | 60       | Cu.m. |                               |                    |         |
| 3.2      | 33kV Vacuum Circuit Breaker  | 2        | Lot   |                               |                    |         |
| 3.3      | 33kV Disconnecting Switch  | 3        | Lot   |                               |                    |         |
| 3.4      | 33kV Current Transformer   | 3        | Nos.  |                               |                    |         |
| 3.5      | 30kV Lightening Arrestor   | 3        | Lot   |                               |                    |         |
| 3.6      | New Cable Trench, Duct, Conduit (2.5*0.15)   | 100      | m     |                               |                    |         |
| 3.7      | Modification of Foundation for Transformer with Rail for the load of 2 x 24 MVA Power Transformer  | 39.20    | Cu.m. |                               |                    |         |
|          | <b>Sub Total (3)</b>   |          |       |                               |                    |         |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No.                          | Description  | Quantity | Unit | Civil Works (Excluding Taxes) |                    | Remarks |
|-----------------------------------|--|----------|------|-------------------------------|--------------------|---------|
|                                   |  |          |      | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)                               | (2)  | (3)      | (4)  | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>4</b>                          | <b>Dismantling Works</b>   |          |      |                               |                    |         |
| 4.1                               | Dismantling and Removal of 132/33 kV 63 MVA Transformer and its accessories to safe location within Substation compound  | 2        | Lots |                               |                    |         |
| 4.2                               | Dismantling & Removal of Existing 132kV SF6 CB   | 1        | Lots |                               |                    |         |
| 4.3                               | Dismantling & Removal of Existing 33kV line C&R Panel  | 2        | Lots |                               |                    |         |
| 4.4                               | Dismantling & Removal of Existing 33kV Cable   | 1        | Lots |                               |                    |         |
| 4.5                               | Dismantling and Removal of 33/11 kV 16.6 MVA Transformer and its accessories to safe location within Substation compound | 2        | Lot  |                               |                    |         |
| 4.6                               | Removal of Existing 11kV cable   | 2        | Lot  |                               |                    |         |
|                                   | <b>Sub Total (4)</b>   |          |      |                               |                    |         |
| <b>5</b>                          |  |          |      |                               |                    |         |
| 5.1                               | Identification Plates, Danger Notice Etc   | 1        | Lots |                               |                    |         |
|                                   | <b>Sub Total (5)</b>   |          |      |                               |                    |         |
| <b>Grand Total of Schedule 4C</b> |  |          |      |                               |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

Tender No. GOD/2078/079-06; Package 1 : Kohalpur Substation

Price Schedule No. 5. Grand Summary ( Schedule Nos. 1 to 4)

| S.N.                              | Description   | Foreign Currency (USD) | Nepalese Rupees (NRs.) | Remarks |
|-----------------------------------|---|------------------------|------------------------|---------|
| 1                                 | Total Price Schedule No. 1. Plant, and Mandatory Spares Parts supplied from abroad                        |                        |                        |         |
| 2                                 | Total Price Schedule No. 2. Plant, and Mandatory Spares Parts supplied from within the Employer's country |                        |                        |         |
| 3                                 | Total Price Schedule No. 3. Design Services   |                        |                        |         |
| 4                                 | Schedule No. 4. Installation Services   |                        |                        |         |
| Part -A:                          | Local Transportation, Insurance and other Incidental services (including port clearance etc.)             |                        |                        |         |
| Part - B:                         | Installation Charges  |                        |                        |         |
| Part - C:                         | Civil Works   |                        |                        |         |
|                                   | Total of Price Schedule no.4: Installation and Other Services   |                        |                        |         |
| <b>Sub Total of Schedule No 4</b> |   |                        |                        |         |
| <b>Grand Total</b>                |   |                        |                        |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations  
(Schedules of Rates and Prices)**

### Schedule No.6. Recommended Spare Parts

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

# Price Schedules

**Tender No. GOD/2078/079-06; Package 4 : Lamki Substation**

## PREAMBLE

### A. General

|                   |  |
|-------------------|--|
| 1                 | <b>The Price Schedules are divided into separate Schedules as follows:</b>   |
| Schedule No. 1:   | Plant and Mandatory Spare Parts Supplied from Abroad   |
| Schedule No. 2:   | Plant and Mandatory Spare Parts Supplied from within the Employer's Country  |
| Schedule No. 3:   | Design Services (Not Applicable)   |
| Schedule No. 4:   | Installation and Other Services  |
| Schedule No. 5:   | Grand Summary  |
| Schedule No. 6:   | Recommended Spare Parts  |
| 2                 | The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.  |
| 3                 | If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.   |
| <b>B. Pricing</b> |  |
| 4                 | The units and rates in figures entered into the Price Schedules should be type written or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.<br>As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement. |
| 5                 | Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.<br>For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.<br>Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.   |
| 6                 | When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.  |
| 7                 | Bidders are instructed to quote the price schedule no. 1 (Plant, and Mandatory Spares Parts supplied from abroad) either in foreign currency (USD) or Nepalese Rupees (NRs.) and rest price schedule Price Schedule 2 (Plant, and Mandatory Spares Parts supplied Within Employer's Country) and Price Schedule No 4 (Installation Services) entirely in Nepalese Rupees (NRs).  |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 4 : Lamki Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit  | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|-------|----------|--|--------------|---------|
|          |   |                   |          |       |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)   |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |                   |          |       |          |  |              |         |
| <b>1</b> | <b>Main Items</b>   |                   |          |       |          |  |              |         |
| 1.1      | 132kV, Outdoor SF6 Circuit Breaker, three Pole type Complete with all accesories and Steel Structure as specified                                     |                   | 1        | Set   |          |  |              |         |
| 1.2      | 33 kV, Outdoor VCB, three Pole type Complete with all accessories and steel structure as specified  |                   | 1        | Set   |          |  |              |         |
| 1.3      | 33kV Disconnecting Switch with Earthing Switch complete with all accessories as specified   |                   | 3        | Set   |          |  |              |         |
| 1.4      | 33kV Current Transformer with all accessories as specified  |                   | 3        | Nos.  |          |  |              |         |
| 1.5      | 30kV Lightening Arrestors with all accessories, as specified  |                   | 6        | Nos   |          |  |              |         |
| 1.6      | 33 kV, 630 sq. mm <b>single</b> core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 33 kV Side      |                   | 750      | Meter |          |  |              |         |
| 1.7      | 11 kV,300 sq. mm three core XLPE Aluminium Power Cable including terminal Joints for both end with all accessories complete for 4 nos of 11 kV feeder |                   | 1800     | Meter |          |  |              |         |
| 1.8      | 600 V Control Cable and Power cable required to complete the scope of work as specified   |                   | 1        | Lot   |          |  |              |         |
| 1.9      | 33 kV Drop Out Fuse with supporting structures as specified   |                   | 3        | Nos   |          |  |              |         |
| 1.10     | 33 kV, 50 sq. mm Three core XLPE Copper Power Cable including 6 terminal Joints for both end with all accessories complete for 33 kV Side             |                   | 100      | Metre |          |  |              |         |
| 1.11     | MCCB  |                   | 1        | Nos   |          |  |              |         |
| 1.12     | MCCB Box  |                   | 1        | Set   |          |  |              |         |
| 1.13     | Earthing set for Distribution Transformer   |                   | 2        | Set   |          |  |              |         |
|          | <b>Sub Total (1)</b>  |                   |          |       |          |  |              |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |                   |          |       |          |  |              |         |
| 2.1      | ACSR conductors of suitable size for connecting with clamps and all accessories for 33kV including 33kV Bus Bar Extension                             |                   | 1        | Lots  |          |  |              |         |
| 2.2      | Insulator Strings for both 33kV Side with all accessories   |                   | 1        | Lots  |          |  |              |         |
|          | <b>Sub Total (2)</b>  |                   |          |       |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 4 : Lamki Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description  | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>3</b> | <b>Grounding System</b>  |                   |          |      |          |  |              |         |
| 3.1      | Earthing of Transformer, Circuit Breaker, and other Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete |                   | 1        | Lots |          |  |              |         |
| 3.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories to complete the specified scope of works  |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (3)</b>   |                   |          |      |          |  |              |         |
| <b>4</b> | <b>Illumination System</b>   |                   |          |      |          |  |              |         |
| 4.1      | Switchyard Lighting as specified, Lot  |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (4)</b>   |                   |          |      |          |  |              |         |
|          | <b>Total of Electrical Part (A)</b>  |                   |          |      |          |  |              |         |
| <b>B</b> | <b>Civil Part</b>  |                   |          |      |          |  |              |         |
| <b>5</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories:   |                   |          |      |          |  |              |         |
| 5.1      | 33kV Disconnecting Switch  |                   | 3        | Lots |          |  |              |         |
| 5.2      | 33kV Current transformer   |                   | 3        | Lots |          |  |              |         |
| 5.3      | 33kV Lightening Arrestor   |                   | 3        | Lots |          |  |              |         |
|          | <b>Sub Total (5)</b>   |                   |          |      |          |  |              |         |
|          | <b>Total of Civil Part (B)</b>   |                   |          |      |          |  |              |         |
| <b>C</b> | <b>Spare Part</b>  |                   |          |      |          |  |              |         |
| <b>6</b> | <b>For 132kV SF6 Circuit Breaker</b>   |                   |          |      |          |  |              |         |
| 6.1      | Tripping Coils, Nos  |                   | 3        | Nos. |          |  |              |         |
| 6.2      | Closing Coils, Nos   |                   | 2        | Nos. |          |  |              |         |
| 6.3      | Pressure Switches, Relays and Contactors (One of each type), Sets  |                   | 2        | Sets |          |  |              |         |
| 6.4      | Motor for Mechanism, Set   |                   | 2        | Sets |          |  |              |         |
| 6.5      | Complete Sets of O-rings and Gaskets   |                   | 1        | Sets |          |  |              |         |
| 6.6      | SF6 Gas filling Nozzle & Adaptor   |                   | 1        | Lot  |          |  |              |         |
|          | <b>Sub Total of (6)</b>  |                   |          |      |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 4 : Lamki Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description                                    | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 7        | <b>For 33kV Vacuum Circuit Breaker</b>         |                   |          |      |          |  |              |         |
| 7.1      | Tripping Coils, Nos                            |                   | 3        | Nos  |          |  |              |         |
| 7.2      | Closing Coils, Nos                             |                   | 2        | Nos  |          |  |              |         |
| 7.3      | Relays and Contactors (One of each type), Sets |                   | 2        | Sets |          |  |              |         |
| 7.4      | Motor for Mechanism, Set                       |                   | 3        | Sets |          |  |              |         |
| 7.5      | Interrupter for VCB, No                        |                   | 2        | Nos  |          |  |              |         |
|          | <b>Sub Total of (7)</b>                        |                   |          |      |          |  |              |         |
| 8        | <b>For 33kV Disconnecting Switches</b>         |                   |          |      |          |  |              |         |
| 8.1      | Main contact assemblies, Set                   |                   | 2        | Sets |          |  |              |         |
| 8.2      | Auxiliary contacts, Set                        |                   | 2        | Sets |          |  |              |         |
| 8.3      | Interlocking coil, Set                         |                   | 2        | Sets |          |  |              |         |
|          | <b>Sub Total of (8)</b>                        |                   |          |      |          |  |              |         |
|          | <b>Total of Spare Part (C)</b>                 |                   |          |      |          |  |              |         |
|          | <b>Grand Total of Schedule 1</b>               |                   |          |      |          |  |              |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

|      |  |
|------|--|
| Note | The prices shall be quoted either in the currency of Nepalese Rupees (NRs.) or foreign currency (USD) only as per ITB 19.1 of the BDS. |
|------|--|




**Tender No. GOD/2078/079-06; Package 4 : Lamki Substation**

1. If a Bidder wishes to Supply some item(s) listed in Price Schedule no. 1 from manufacturing plant in Nepal, then such item(s) and price of such item(s) shall be quoted in this Price Schedule no. 2 only. Columns against such item(s) shall be left blank in Price Schedule no. 1.
2. Item No. in the following table shall match those in Price Schedule no. 1

### Price Schedule 2. Plant, and Mandatory Spares Parts supplied Within Employer's Country

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**

**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 4 : Lamki Substation**

**Price Schedule No 3: Design Services**

| Item | Description  | Qty.                  | Unit Price <sup>#</sup> |                                     | Total Price <sup>#</sup> |                                    |
|------|--|-----------------------|-------------------------|-------------------------------------|--------------------------|------------------------------------|
|      |  |                       | Local Currency Portion  | Foreign Currency Portion (optional) | LocalCurrency Portion    | Foreign currency Portion(optional) |
| (1)  | (2)  | (3)                   | (4)                     | (5)                                 | (6)=(4)x(3)              | (7)=(5)x(3)                        |
|      | The scope of the Contract covers the detail design as well. The price of the detail design is deemed to have been covered in the prices of the other schedules | <b>Not Applicable</b> |                         |                                     |                          |                                    |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_






# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 4 : Lamki Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit  | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|-------|--|--------------------|---------|
|          |   |          |       | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)   | (5)  | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |       |  |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |       |  |                    |         |
| 1.1      | 132kV, Outdoor SF6 Circuit Breaker, three Pole type Complete with all accesories and Steel Structure as specified                                     | 1        | Set   |  |                    |         |
| 1.2      | 33 kV, Outdoor VCB, three Pole type Complete with all accessories and steel structure as specified  | 1        | Set   |  |                    |         |
| 1.3      | 33kV Disconnecting Switch with Earthing Switch complete with all accessories as specified   | 3        | Set   |  |                    |         |
| 1.4      | 33kV Current Transformer with all accessories as specified  | 3        | Nos.  |  |                    |         |
| 1.5      | 30kV Lightening Arrestors with all accessories, as specified  | 6        | Nos   |  |                    |         |
| 1.6      | 33 kV, 630 sq. mm <b>single</b> core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 33 kV Side      | 750      | Meter |  |                    |         |
| 1.7      | 11 kV,300 sq. mm three core XLPE Aluminium Power Cable including terminal Joints for both end with all accessories complete for 4 nos of 11 kV feeder | 1800     | Meter |  |                    |         |
| 1.8      | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 1        | Lot   |  |                    |         |
| 1.9      | 33 kV Drop Out Fuse with supporting structures as specified   | 3        | Nos   |  |                    |         |
| 1.10     | 33 kV, 50 sq. mm Three core XLPE Copper Power Cable including 6 terminal Joints for both end with all accessories complete for 33 kV Side             | 100      | Metre |  |                    |         |
| 1.11     | MCCB  | 1        | Nos   |  |                    |         |
| 1.12     | MCCB Box  | 1        | Set   |  |                    |         |
| 1.13     | Earthing set for Distribution Transformer   | 2        | Set   |  |                    |         |
|          | <b>Sub Total (1)</b>  |          |       |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 4 : Lamki Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| <b>2</b> | <b>Miscellaneous Materials</b>   |          |      |  |                    |         |
| 2.1      | ACSR conductors of suitable size for connecting with clamps and all accessories for 33kV including 33kV Bus Bar Extension  | 1        | Lots |  |                    |         |
| 2.2      | Insulator Strings for both 33kV Side with all accessories  | 1        | Lots |  |                    |         |
|          | <b>Sub Total (2)</b>   |          |      |  |                    |         |
| <b>3</b> | <b>Grounding System</b>  |          |      |  |                    |         |
| 3.1      | Earthing of Transformer, Circuit Breaker, and other Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete | 1        | Lots |  |                    |         |
| 3.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories to complete the specified scope of works  | 1        | Lots |  |                    |         |
|          | <b>Sub Total (3)</b>   |          |      |  |                    |         |
| <b>4</b> | <b>Illumination System</b>   |          |      |  |                    |         |
| 4.1      | Switchyard Lighting as specified, Lot  | 1        | Lots |  |                    |         |
|          | <b>Sub Total (4)</b>   |          |      |  |                    |         |
|          | <b>Total of Electrical Part (A)</b>  |          |      |  |                    |         |
| <b>B</b> | <b>Civil Part</b>  |          |      |  |                    |         |
| <b>5</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories:   |          |      |  |                    |         |
| 5.1      | 33kV Disconnecting Switch  | 3        | Lots |  |                    |         |
| 5.2      | 33kV Current transformer   | 3        | Lots |  |                    |         |
| 5.3      | 33kV Lightning Arrestor  | 3        | Lots |  |                    |         |
|          | <b>Sub Total (5)</b>   |          |      |  |                    |         |
|          | <b>Total of Civil Part (B)</b>   |          |      |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 4 : Lamki Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|------|--|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| <b>C</b> | <b>Spare Part</b>   |          |      |  |                    |         |
| <b>6</b> | <b>For 132kV SF6 Circuit Breaker</b>                              |          |      |  |                    |         |
| 6.1      | Tripping Coils, Nos   | 3        | Nos. |  |                    |         |
| 6.2      | Closing Coils, Nos  | 2        | Nos. |  |                    |         |
| 6.3      | Pressure Switches, Relays and Contactors (One of each type), Sets | 2        | Sets |  |                    |         |
| 6.4      | Motor for Mechanism, Set  | 2        | Sets |  |                    |         |
| 6.5      | Complete Sets of O-rings and Gaskets                              | 1        | Sets |  |                    |         |
| 6.6      | SF6 Gas filling Nozzle & Adaptor                                  | 1        | Lot  |  |                    |         |
|          | <b>Sub Total of (6)</b>   |          |      |  |                    |         |
| <b>7</b> | <b>For 33kV Vacuum Circuit Breaker</b>                            |          |      |  |                    |         |
| 7.1      | Tripping Coils, Nos   | 3        | Nos  |  |                    |         |
| 7.2      | Closing Coils, Nos  | 2        | Nos  |  |                    |         |
| 7.3      | Relays and Contactors (One of each type), Sets                    | 2        | Sets |  |                    |         |
| 7.4      | Motor for Mechanism, Set  | 3        | Sets |  |                    |         |
| 7.5      | Interruption for VCB, No  | 2        | Nos  |  |                    |         |
|          | <b>Sub Total of (7)</b>   |          |      |  |                    |         |
| <b>8</b> | <b>For 33kV Disconnecting Switches</b>                            |          |      |  |                    |         |
| 8.1      | Main contact assemblies, Set                                      | 2        | Sets |  |                    |         |
| 8.2      | Auxiliary contacts, Set   | 2        | Sets |  |                    |         |
| 8.3      | Interlocking coil, Set  | 2        | Sets |  |                    |         |
|          | <b>Sub Total of (8)</b>   |          |      |  |                    |         |
|          | <b>Total of Spare Part (C)</b>                                    |          |      |  |                    |         |
|          | <b>Grand Total of Schedule 4A</b>                                 |          |      |  |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations

#### (Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 4 : Lamki Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit  | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|-------|--------------------------------|--------------------|---------|
|          |   |          |       | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)   | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |       |                                |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |       |                                |                    |         |
| 1.1      | 132/33kV, 30 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified          | 2        | Set   |                                |                    |         |
| 1.2      | 132kV, Outdoor SF6 Circuit Breaker, three Pole type Complete with all accesories and Steel Structure as specified                                     | 1        | Set   |                                |                    |         |
| 1.3      | 33 kV, Outdoor VCB, three Pole type Complete with all accessories and steel structure as specified  | 1        | Set   |                                |                    |         |
| 1.4      | 33kV Disconnecting Switch with Earthing Switch complete with all accessories as specified   | 3        | Set   |                                |                    |         |
| 1.5      | 33kV Current Transformer with all accessories as specified  | 3        | Nos.  |                                |                    |         |
| 1.6      | 30kV Lightening Arrestors with all accessories, as specified  | 6        | Nos   |                                |                    |         |
| 1.7      | 33 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 33 kV Side             | 750      | Meter |                                |                    |         |
| 1.8      | 11 kV,300 sq. mm three core XLPE Aluminium Power Cable including terminal Joints for both end with all accessories complete for 4 nos of 11 kV feeder | 1800     | Meter |                                |                    |         |
| 1.9      | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 1        | Lot   |                                |                    |         |
| 1.10     | 33/0.4 kV, 100kVA Distribution Transformer complete with channels, clamps and all other accessories   | 1        | Set   |                                |                    |         |
|          | <b>Sub Total (1)</b>  |          |       |                                |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |       |                                |                    |         |
| 2.1      | ACSR conductors of suitable size for connecting with clamps and all accessories for 33kV including 33kV Bus Bar Extension                             | 1        | Lots  |                                |                    |         |
| 2.2      | Insulator Strings for both 33kV Side with all accessories   | 1        | Lots  |                                |                    |         |
|          | <b>Sub Total (2)</b>  |          |       |                                |                    |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 4 : Lamki Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description  | Quantity | Unit | Installation (Excluding Taxes) |                    | Remarks |
|----------|--|----------|------|--------------------------------|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>3</b> | <b>Grounding System</b>  |          |      |                                |                    |         |
| 3.1      | Earthing of Transformer, Circuit Breaker, and other Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete | 1        | Lots |                                |                    |         |
| 3.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories to complete the specified scope of works  | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (3)</b>   |          |      |                                |                    |         |
| <b>4</b> | <b>Illumination System</b>   |          |      |                                |                    |         |
| 4.1      | Switchyard Lighting for 132/33kV Power Transformer Bays as specified, Lot  | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (4)</b>   |          |      |                                |                    |         |
| <b>5</b> | <b>Transportation of Power Transformer</b>   |          |      |                                |                    |         |
| 5.1      | 132/33kV, 30 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified (Attaria Substation to Lamki Substation )                           | 2        | Lots |                                |                    |         |
|          | <b>Sub Total (5)</b>   |          |      |                                |                    |         |
|          | <b>Total of Electrical Part (A)</b>  |          |      |                                |                    |         |
|          | <b>Grand Total of Schedule 4B</b>  |          |      |                                |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 4 : Lamki Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No. | Description  | Quantity | Unit  | Civil Works (Excluding Taxes) |                    | Remarks |
|----------|--|----------|-------|-------------------------------|--------------------|---------|
|          |  |          |       | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)   | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Civil Works</b>   |          |       |                               |                    |         |
| 1        | <b>Steel structure</b><br>for post, beam and equipment supporting frame complete with bolts, nuts and all accessories:                           |          |       |                               |                    |         |
| 1.1      | 33kV Disconnecting Switch  | 3        | Lots  |                               |                    |         |
| 1.2      | 33kV Current transformer   | 3        | Lots  |                               |                    |         |
| 1.3      | 33kV Lightening Arrestor   | 3        | Lots  |                               |                    |         |
| 1.4      | 11m Steel Tublar Pole  | 2        | Nos.  |                               |                    |         |
|          | <b>Sub Total (1)</b>   |          |       |                               |                    |         |
| <b>2</b> | <b>Preliminary work</b>  |          |       |                               |                    |         |
| 2.1      | Clearing and Stripping   | 1        | Lots  |                               |                    |         |
| 2.2      | Site Grading, leveling   | 1        | Lots  |                               |                    |         |
|          | <b>Sub Total (2)</b>   |          |       |                               |                    |         |
| <b>3</b> | <b>Reinforced Cement Concrete Foundation for Steel Structures</b> complete excavation, backfilling, forms, concrete works and reinforcement bars |          |       |                               |                    |         |
| 3.1      | Modification of Foundation for Transformer with Rail for the load of 30 MVA Power Transformer  | 60       | cu.m. |                               |                    |         |
| 3.2      | 132kV SF6 Circuit Breaker  | 1        | Lot   |                               |                    |         |
| 3.3      | 33kV Vacuum Circuit Breaker  | 1        | Lot   |                               |                    |         |
| 3.4      | 33kV Disconnecting Switch  | 3        | Lot   |                               |                    |         |
| 3.5      | 33kV Current Transformer   | 3        | Nos.  |                               |                    |         |
| 3.6      | 30kV Lightening Arrestor   | 3        | Lot   |                               |                    |         |
| 3.7      | New Cable Trench, Duct, Conduit (2.5*0.15)   | 50       | m     |                               |                    |         |
|          | <b>Sub Total (3)</b>   |          |       |                               |                    |         |

**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 4 : Lamki Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No.                          | Description   | Quantity | Unit | Civil Works (Excluding Taxes) |                    | Remarks |
|-----------------------------------|---|----------|------|-------------------------------|--------------------|---------|
|                                   |   |          |      | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)                               | (2)   | (3)      | (4)  | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>4</b>                          | <b>Dismantling Works</b>  |          |      |                               |                    |         |
| 4.1                               | Dismantling and Removal of 132/33 kV 15 MVA Transformer and its accessories to safe location within Substation compound | 2        | Lots |                               |                    |         |
| 4.2                               | Dismantling & Removal of Existing 132kV SF6 CB  | 1        | Lots |                               |                    |         |
| 4.3                               | Removal of Existing 33kV Cable  | 1        | Lots |                               |                    |         |
| 4.4                               | Removal of Existing 11kV Cable  | 1        | Lots |                               |                    |         |
|                                   | <b>Sub Total (4)</b>  |          |      |                               |                    |         |
| <b>Grand Total of Schedule 4C</b> |   |          |      |                               |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

Tender No. GOD/2078/079-06; Package 4 : Lamki Substation

Price Schedule No. 5. Grand Summary ( Schedule Nos. 1 to 4)

| S.N.                              | Description   | Foreign Currency (USD) | Nepalese Rupees (NRs.) | Remarks |
|-----------------------------------|---|------------------------|------------------------|---------|
| 1                                 | Total Price Schedule No. 1. Plant, and Mandatory Spares Parts supplied from abroad                        |                        |                        |         |
| 2                                 | Total Price Schedule No. 2. Plant, and Mandatory Spares Parts supplied from within the Employer's country |                        |                        |         |
| 3                                 | Total Price Schedule No. 3. Design Services   |                        |                        |         |
| 4                                 | Schedule No. 4. Installation Services   |                        |                        |         |
| Part -A:                          | Local Transportation, Insurance and other Incidental services (including port clearance etc.)             |                        |                        |         |
| Part - B:                         | Installation Charges  |                        |                        |         |
| Part - C:                         | Civil Works   |                        |                        |         |
|                                   | Total of Price Schedule no.4: Installation and Other Services   |                        |                        |         |
| <b>Sub Total of Schedule No 4</b> |   |                        |                        |         |
| <b>Grand Total</b>                |   |                        |                        |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_






**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations  
(Schedules of Rates and Prices)**

### Schedule No.6. Recommended Spare Parts

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

# Price Schedules

**Tender No. GOD/2078/079-06; Package 3 : Pokhara Substation**

## PREAMBLE

### A. General

|                   |  |
|-------------------|--|
| 1                 | <b>The Price Schedules are divided into separate Schedules as follows:</b>   |
| Schedule No. 1:   | Plant and Mandatory Spare Parts Supplied from Abroad   |
| Schedule No. 2:   | Plant and Mandatory Spare Parts Supplied from within the Employer's Country  |
| Schedule No. 3:   | Design Services (Not Applicable)   |
| Schedule No. 4:   | Installation and Other Services  |
| Schedule No. 5:   | Grand Summary  |
| Schedule No. 6:   | Recommended Spare Parts  |
| 2                 | The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.  |
| 3                 | If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.   |
| <b>B. Pricing</b> |  |
| 4                 | The units and rates in figures entered into the Price Schedules should be type written or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.<br>As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement. |
| 5                 | Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.<br>For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.<br>Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.   |
| 6                 | When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.  |
| 7                 | Bidders are instructed to quote the price schedule no. 1 (Plant, and Mandatory Spares Parts supplied from abroad) either in foreign currency (USD) or Nepalese Rupees (NRs.) and rest price schedule Price Schedule 2 (Plant, and Mandatory Spares Parts supplied Within Employer's Country) and Price Schedule No 4 (Installation Services) entirely in Nepalese Rupees (NRs).  |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 3 : Pokhara Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description  | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>A</b> | <b>Electrical Part</b>   |                   |          |      |          |  |              |         |
| <b>1</b> | <b>Main Items</b>  |                   |          |      |          |  |              |         |
| 1.1      | 132/11kV, 45 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified  |                   | 2        | Set  |          |  |              |         |
| 1.2      | 132kV, Outdoor SF6 Circuit Breaker, three Pole type Complete with all accesories and Steel Structure as specified  |                   | 1        | Set  |          |  |              |         |
| 1.3      | 11 kV,Incomer VCB, three Pole type Complete with all accessories as specified  |                   | 2        | Set  |          |  |              |         |
| 1.4      | 11 kV,Outgoing Feeder VCB, three Pole type Complete with all accessories as specified  |                   | 4        | Set  |          |  |              |         |
| 1.5      | 600 V Control Cable and Power cable required to complete the scope of work as specified  |                   | 1        | Lot  |          |  |              |         |
|          | <b>Sub Total (1)</b>   |                   |          |      |          |  |              |         |
| <b>2</b> | <b>Grounding System</b>  |                   |          |      |          |  |              |         |
| 2.1      | Earthing of Transformer, Circuit Breaker, and other Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete |                   | 1        | Lots |          |  |              |         |
| 2.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories to complete the specified scope of works  |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (2)</b>   |                   |          |      |          |  |              |         |
| <b>3</b> | <b>Illumination System</b>   |                   |          |      |          |  |              |         |
| 3.1      | Switchyard Lighting as specified, Lot  |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (3)</b>   |                   |          |      |          |  |              |         |
|          | <b>Total of Electrical Part (A)</b>  |                   |          |      |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 3 : Pokhara Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>B</b> | <b>Spare Part</b>   |                   |          |      |          |  |              |         |
| 4        | <b>Spare Parts for 132/11kV, 45 MVA Power Transformer</b>         |                   |          |      |          |  |              |         |
| 4.1      | 33kV Phase Bushing, 11kV Bushing & Neutral Bushing (1 each)       |                   | 4        | Sets |          |  |              |         |
| 4.2      | Dial Type Thermometer (OTI, WTI 1each)                            |                   | 4        | Nos  |          |  |              |         |
| 4.3      | Oil Level Gauge   |                   | 4        | Nos  |          |  |              |         |
| 4.4      | Indicating lamps (100% of used), Lot                              |                   | 4        | Lot  |          |  |              |         |
| 4.5      | All Types of Fuses (100% of used)                                 |                   | 4        | Lot  |          |  |              |         |
| 4.6      | Complete Set of Gaskets   |                   | 4        | Set  |          |  |              |         |
| 4.7      | Complete set of Pressure Relief Device                            |                   | 4        | Set  |          |  |              |         |
| 4.8      | One BCT of each type  |                   | 4        | Nos  |          |  |              |         |
| 4.9      | Cooler Control Contactors   |                   | 4        | Nos  |          |  |              |         |
| 4.10     | OLTC Motor Contactor  |                   | 4        | Nos  |          |  |              |         |
| 4.11     | Complete set of Bucholz Relay                                     |                   | 4        | Set  |          |  |              |         |
|          | <b>Sub Total of (4)</b>   |                   |          |      |          |  |              |         |
| 5        | <b>For 132kV SF6 Circuit Breaker</b>                              |                   |          |      |          |  |              |         |
| 5.1      | Tripping Coils, Nos   |                   | 3        | Nos. |          |  |              |         |
| 5.2      | Closing Coils, Nos  |                   | 2        | Nos. |          |  |              |         |
| 5.3      | Pressure Switches, Relays and Contactors (One of each type), Sets |                   | 2        | Sets |          |  |              |         |
| 5.4      | Motor for Mechanism, Set  |                   | 2        | Sets |          |  |              |         |
| 5.5      | Complete Sets of O-rings and Gaskets                              |                   | 1        | Sets |          |  |              |         |
| 5.6      | SF6 Gas filling Nozzle & Adaptor                                  |                   | 1        | Lot  |          |  |              |         |
|          | <b>Sub Total of (5)</b>   |                   |          |      |          |  |              |         |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 3 : Pokhara Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description                                    | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 6        | <b>For 11 kV Vacuum Circuit Breaker</b>        |                   |          |      |          |  |              |         |
| 6.1      | 11kV Vacuum Interrupter                        |                   | 6        | Nos  |          |  |              |         |
| 6.2      | Tripping Coils, Nos                            |                   | 12       | Nos  |          |  |              |         |
| 6.3      | Closing Coils, Nos                             |                   | 12       | Sets |          |  |              |         |
| 6.4      | Relays and Contactors (One of each type), Sets |                   | 6        | Sets |          |  |              |         |
| 6.5      | Spring Charging Motor, Set                     |                   | 6        | Nos  |          |  |              |         |
| 6.6      | <b>Protection Relays</b>                       |                   |          |      |          |  |              |         |
| 6.6.1    | 3 phase Overcurrent Relay, for 11kV side, Sets |                   | 4        | Set  |          |  |              |         |
| 6.6.2    | Ground Fault Relay, for 11kV side, Sets        |                   |          |      |          |  |              |         |
| 6.7      | Ammeter, Nos                                   |                   | 3        | Nos  |          |  |              |         |
| 6.8      | Voltmeter, Nos                                 |                   | 3        | Nos  |          |  |              |         |
| 6.9      | kVA Meter, each                                |                   | 3        | Nos  |          |  |              |         |
| 6.10     | 11kV CTs as in Inconer                         |                   | 2        | Set  |          |  |              |         |
| 6.11     | 11kV CTs as in Outgoing Feeder, Set            |                   | 4        | Set  |          |  |              |         |
| 6.12     | Operating Handle                               |                   | 2        | No   |          |  |              |         |
| 6.13     | Indicating lamps (100% of used), Lot           |                   | 2        | Lot  |          |  |              |         |
|          | <b>Sub Total of (6)</b>                        |                   |          |      |          |  |              |         |
|          | <b>Total of Spare Part (C)</b>                 |                   |          |      |          |  |              |         |
|          | <b>Grand Total of Schedule 1</b>               |                   |          |      |          |  |              |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

|      |  |
|------|--|
| Note | The prices shall be quoted either in the currency of Nepalese Rupees (NRs.) or foreign currency (USD) only as per ITB 19.1 of the BDS. |
|------|--|




**Tender No. GOD/2078/079-06; Package 3 : Pokhara Substation**

1. If a Bidder wishes to Supply some item(s) listed in Price Schedule no. 1 from manufacturing plant in Nepal, then such item(s) and price of such item(s) shall be quoted in this Price Schedule no. 2 only. Columns against such item(s) shall be left blank in Price Schedule no. 1.
2. Item No. in the following table shall match those in Price Schedule no. 1

### Price Schedule 2. Plant, and Mandatory Spares Parts supplied Within Employer's Country

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 3 : Pokhara Substation**  
**Price Schedule No 3: Design Services**

| Item | Description  | Qty.                  | Unit Price <sup>#</sup>      |  | Total Price <sup>#</sup> |                                       |
|------|--|-----------------------|------------------------------|--|--------------------------|---------------------------------------|
|      |  |                       | Local<br>Currency<br>Portion | Foreign<br>Currency<br>Portion<br>(optional) | LocalCurrency<br>Portion | Foreign currency<br>Portion(optional) |
| (1)  | (2)  | (3)                   | (4)                          | (5)  | (6)=(4)x(3)              | (7)=(5)x(3)                           |
|      | The scope of the Contract covers the detail design as well. The price of the detail design is deemed to have been covered in the prices of the other schedules | <b>Not Applicable</b> |                              |  |                          |                                       |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 3 : Pokhara Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>   |          |      |  |                    |         |
| <b>1</b> | <b>Main Items</b>  |          |      |  |                    |         |
| 1.1      | 132/11kV, 45 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified  | 2        | Set  |  |                    |         |
| 1.2      | 132kV, Outdoor SF6 Circuit Breaker, three Pole type Complete with all accesories and Steel Structure as specified  | 1        | Set  |  |                    |         |
| 1.3      | 11 kV, Incomer VCB, three Pole type Complete with all accessories as specified   | 2        | Set  |  |                    |         |
| 1.4      | 11 kV, Outgoing Feeder VCB, three Pole type Complete with all accessories as specified   | 4        | Set  |  |                    |         |
| 1.5      | 600 V Control Cable and Power cable required to complete the scope of work as specified  | 1        | Lot  |  |                    |         |
|          | <b>Sub Total (1)</b>   |          |      |  |                    |         |
| <b>2</b> | <b>Grounding System</b>  |          |      |  |                    |         |
| 2.1      | Earthing of Transformer, Circuit Breaker, and other Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete | 1        | Lots |  |                    |         |
| 2.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories to complete the specified scope of works  | 1        | Lots |  |                    |         |
|          | <b>Sub Total (3)</b>   |          |      |  |                    |         |
| <b>3</b> | <b>Illumination System</b>   |          |      |  |                    |         |
| 3.1      | Switchyard Lighting as specified, Lot  | 1        | Lots |  |                    |         |
|          | <b>Sub Total (4)</b>   |          |      |  |                    |         |
|          | <b>Total of Electrical Part (A)</b>  |          |      |  |                    |         |






# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 3 : Pokhara Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|------|--|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| <b>B</b> | <b>Spare Part</b>   |          |      |  |                    |         |
| <b>4</b> | <b>Spare Parts for 132/11kV, 45 MVA Power Transformer</b>         |          |      |  |                    |         |
| 4.1      | 33kV Phase Bushing, 11kV Bushing & Neutral Bushing (1 each)       | 4        | Sets |  |                    |         |
| 4.2      | Dial Type Thermometer (OTI, WTI 1each)                            | 4        | Nos  |  |                    |         |
| 4.3      | Oil Level Gauge   | 4        | Nos  |  |                    |         |
| 4.4      | Indicating lamps (100% of used), Lot                              | 4        | Lot  |  |                    |         |
| 4.5      | All Types of Fuses (100% of used)                                 | 4        | Lot  |  |                    |         |
| 4.6      | Complete Set of Gaskets   | 4        | Set  |  |                    |         |
| 4.7      | Complete set of Pressure Relief Device                            | 4        | Set  |  |                    |         |
| 4.8      | One BCT of each type  | 4        | Nos  |  |                    |         |
| 4.9      | Cooler Control Contactors   | 4        | Nos  |  |                    |         |
| 4.10     | OLTC Motor Contactor  | 4        | Nos  |  |                    |         |
| 4.11     | Complete set of Bucholz Relay                                     | 4        | Set  |  |                    |         |
|          | <b>Sub Total of (4)</b>   |          |      |  |                    |         |
| <b>5</b> | <b>For 132kV SF6 Circuit Breaker</b>                              |          |      |  |                    |         |
| 5.1      | Tripping Coils, Nos   | 3        | Nos. |  |                    |         |
| 5.2      | Closing Coils, Nos  | 2        | Nos. |  |                    |         |
| 5.3      | Pressure Switches, Relays and Contactors (One of each type), Sets | 2        | Sets |  |                    |         |
| 5.4      | Motor for Mechanism, Set  | 2        | Sets |  |                    |         |
| 5.5      | Complete Sets of O-rings and Gaskets                              | 1        | Sets |  |                    |         |
| 5.6      | SF6 Gas filling Nozzle & Adaptor                                  | 1        | Lot  |  |                    |         |
|          | <b>Sub Total of (5)</b>   |          |      |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 3 : Pokhara Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description                                    | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 6        | <b>For Control and Relay Panel</b>             |          |      |  |                    |         |
| 6.1      | 11kV Vacuum Interrupter                        | 6        | Nos  |  |                    |         |
| 6.2      | Tripping Coils, Nos                            | 12       | Nos  |  |                    |         |
| 6.3      | Closing Coils, Nos                             | 12       | Sets |  |                    |         |
| 6.4      | Relays and Contactors (One of each type), Sets | 6        | Sets |  |                    |         |
| 6.5      | Spring Charging Motor, Set                     | 6        | Nos  |  |                    |         |
| 6.6      | <b>Protection Relays</b>                       |          |      |  |                    |         |
| 6.6.1    | 3 phase Overcurrent Relay, for 11kV side, Sets | 4        | Set  |  |                    |         |
| 6.6.2    | Ground Fault Relay, for 11kV side, Sets        |          |      |  |                    |         |
| 6.7      | Ammeter, Nos                                   | 3        | Nos  |  |                    |         |
| 6.8      | Voltmeter, Nos                                 | 3        | Nos  |  |                    |         |
| 6.9      | kVA Meter, each                                | 3        | Nos  |  |                    |         |
| 6.10     | 11kV CTs as in Inconer                         | 2        | Set  |  |                    |         |
| 6.11     | 11kV CTs as in Outgoing Feeder, Set            | 4        | Set  |  |                    |         |
| 6.12     | Operating Handle                               | 2        | No   |  |                    |         |
| 6.13     | Indicating lamps (100% of used), Lot           | 2        | Lot  |  |                    |         |
|          | <b>Sub Total of (6)</b>                        |          |      |  |                    |         |
|          | <b>Total of Spare Part (C)</b>                 |          |      |  |                    |         |
|          | <b>Grand Total of Schedule 4A</b>              |          |      |  |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 3 : Pokhara Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description  | Quantity | Unit | Installation (Excluding Taxes) |                    | Remarks |
|----------|--|----------|------|--------------------------------|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>   |          |      |                                |                    |         |
| <b>1</b> | <b>Main Items</b>  |          |      |                                |                    |         |
| 1.1      | 132/11kV, 45 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified  | 2        | Set  |                                |                    |         |
| 1.2      | 132kV, Outdoor SF6 Circuit Breaker, three Pole type Complete with all accesories and Steel Structure as specified  | 1        | Set  |                                |                    |         |
| 1.3      | 11 kV, Incomer VCB, three Pole type Complete with all accessories as specified   | 2        | Set  |                                |                    |         |
| 1.4      | 11 kV, Outgoing Feeder VCB, three Pole type Complete with all accessories as specified   | 4        | Set  |                                |                    |         |
| 1.5      | 600 V Control Cable and Power cable required to complete the scope of work as specified  | 1        | Lot  |                                |                    |         |
|          | <b>Sub Total (1)</b>   |          |      |                                |                    |         |
| <b>2</b> | <b>Grounding System</b>  |          |      |                                |                    |         |
| 2.1      | Earthing of Transformer, Circuit Breaker, and other Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete | 1        | Lots |                                |                    |         |
| 2.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories to complete the specified scope of works  | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (2)</b>   |          |      |                                |                    |         |
| <b>3</b> | <b>Illumination System</b>   |          |      |                                |                    |         |
| 3.1      | Switchyard Lighting as specified, Lot  | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (3)</b>   |          |      |                                |                    |         |
|          | <b>Total of Electrical Part (A)</b>  |          |      |                                |                    |         |
|          | <b>Grand Total of Schedule 4B</b>  |          |      |                                |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 3 : Pokhara Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No.                          | Description  | Quantity | Unit  | Civil Works (Excluding Taxes) |                    | Remarks |
|-----------------------------------|--|----------|-------|-------------------------------|--------------------|---------|
|                                   |  |          |       | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)                               | (2)  | (3)      | (4)   | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>A</b>                          | <b>Civil Works</b>   |          |       |                               |                    |         |
| <b>1</b>                          | <b>Preliminary work</b>  |          |       |                               |                    |         |
| 1.1                               | Clearing and Stripping   | 1        | Lots  |                               |                    |         |
| 1.2                               | Site Grading, leveling   | 1        | Lots  |                               |                    |         |
|                                   | <b>Sub Total (1)</b>   |          |       |                               |                    |         |
| <b>2</b>                          | <b>Reinforced Cement Concrete Foundation for Steel Structures complete excavation, backfilling, forms, concrete works and reinforcement bars</b> |          |       |                               |                    |         |
| 2.1                               | Modification of Foundation for Transformer with Rail for the load of 45 MVA Power Transformer  | 60       | Cu.m. |                               |                    |         |
|                                   | <b>Sub Total (2)</b>   |          |       |                               |                    |         |
| <b>4</b>                          | <b>Dismantling Works</b>   |          |       |                               |                    |         |
| 4.1                               | Dismantling and Removal of 132/11 kV, 30 MVA Transformer and its accessories to safe location within Substation compound                         | 2        | Lots  |                               |                    |         |
| 4.2                               | Removal of Existing 11kV cable   | 2        | Lots  |                               |                    |         |
|                                   | <b>Sub Total (4)</b>   |          |       |                               |                    |         |
| <b>Grand Total of Schedule 4C</b> |  |          |       |                               |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

Tender No. GOD/2078/079-06; Package 3 : Pokhara Substation

Price Schedule No. 5. Grand Summary ( Schedule Nos. 1 to 4)

| S.N.                              | Description   | Foreign Currency (USD) | Nepalese Rupees (NRs.) | Remarks |
|-----------------------------------|---|------------------------|------------------------|---------|
| 1                                 | Total Price Schedule No. 1. Plant, and Mandatory Spares Parts supplied from abroad                        |                        |                        |         |
| 2                                 | Total Price Schedule No. 2. Plant, and Mandatory Spares Parts supplied from within the Employer's country |                        |                        |         |
| 3                                 | Total Price Schedule No. 3. Design Services   |                        |                        |         |
| 4                                 | Schedule No. 4. Installation Services   |                        |                        |         |
| Part -A:                          | Local Transportation, Insurance and other Incidental services (including port clearance etc.)             |                        |                        |         |
| Part - B:                         | Installation Charges  |                        |                        |         |
| Part - C:                         | Civil Works   |                        |                        |         |
|                                   | Total of Price Schedule no.4: Installation and Other Services   |                        |                        |         |
| <b>Sub Total of Schedule No 4</b> |   |                        |                        |         |
| <b>Grand Total</b>                |   |                        |                        |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations  
(Schedules of Rates and Prices)**

### Schedule No.6. Recommended Spare Parts

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

# Price Schedules

**Tender No. GOD/2078/079-06; Package 4 : Transformer Shifting**

## PREAMBLE

### A. General

|                   |  |
|-------------------|--|
| 1                 | <b>The Price Schedules are divided into separate Schedules as follows:</b>   |
| Schedule No. 1:   | Plant and Mandatory Spare Parts Supplied from Abroad   |
| Schedule No. 2:   | Plant and Mandatory Spare Parts Supplied from within the Employer's Country  |
| Schedule No. 3:   | Design Services (Not Applicable)   |
| Schedule No. 4:   | Installation and Other Services  |
| Schedule No. 5:   | Grand Summary  |
| Schedule No. 6:   | Recommended Spare Parts  |
| 2                 | The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.  |
| 3                 | If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.   |
| <b>B. Pricing</b> |  |
| 4                 | The units and rates in figures entered into the Price Schedules should be type written or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.<br>As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement. |
| 5                 | Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.<br>For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.<br>Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.   |
| 6                 | When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.  |
| 7                 | Bidders are instructed to quote the price schedule no. 1 (Plant, and Mandatory Spares Parts supplied from abroad) either in foreign currency (USD) or Nepalese Rupees (NRs.) and rest price schedule Price Schedule 2 (Plant, and Mandatory Spares Parts supplied Within Employer's Country) and Price Schedule No 4 (Installation Services) entirely in Nepalese Rupees (NRs).  |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 4 : Transformer Shifting**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description           | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|-----------------------|-------------------|----------|------|----------|--|--------------|---------|
|          |                       |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)                   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
|          |                       |                   |          |      |          |  |              |         |
|          |                       |                   |          |      |          |  |              |         |
|          |                       |                   |          |      |          |  |              |         |
|          | <b>Not Applicable</b> |                   |          |      |          |  |              |         |
|          |                       |                   |          |      |          |  |              |         |
|          |                       |                   |          |      |          |  |              |         |
|          |                       |                   |          |      |          |  |              |         |
|          |                       |                   |          |      |          |  |              |         |
|          |                       |                   |          |      |          |  |              |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

|      |  |
|------|--|
| Note | The prices shall be quoted either in the currency of Nepalese Rupees (NRs.) or foreign currency (USD) only as per ITB 19.1 of the BDS. |
|------|--|






**Tender No. GOD/2078/079-06; Package 4 : Transformer Shifting**

1. If a Bidder wishes to Supply some item(s) listed in Price Schedule no. 1 from manufacturing plant in Nepal, then such item(s) and price of such item(s) shall be quoted in this Price Schedule no. 2 only. Columns against such item(s) shall be left blank in Price Schedule no. 1.
2. Item No. in the following table shall match those in Price Schedule no. 1

## Price Schedule 2. Plant, and Mandatory Spares Parts supplied Within Employer's Country

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**

**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 4 : Transformer Shifting**

**Price Schedule No 3: Design Services**

| Item | Description  | Qty.                  | Unit Price <sup>#</sup> |                                     | Total Price <sup>#</sup> |                                    |
|------|--|-----------------------|-------------------------|-------------------------------------|--------------------------|------------------------------------|
|      |  |                       | Local Currency Portion  | Foreign Currency Portion (optional) | LocalCurrency Portion    | Foreign currency Portion(optional) |
| (1)  | (2)  | (3)                   | (4)                     | (5)                                 | (6)=(4)x(3)              | (7)=(5)x(3)                        |
|      | The scope of the Contract covers the detail design as well. The price of the detail design is deemed to have been covered in the prices of the other schedules | <b>Not Applicable</b> |                         |                                     |                          |                                    |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




# Nepal Electricity Authority

Transmission Directorate

Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations

(Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 4 : Transformer Shifting

## Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description     | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|-----------------|----------|------|--|--------------------|---------|
|          |                 |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)             | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| A        | Electrical Part |          |      |  |                    |         |
| 1        | Main Items      |          |      |  |                    |         |
|          |                 |          |      |  |                    |         |
|          | Not Applicable  |          |      |  |                    |         |
|          |                 |          |      |  |                    |         |
|          |                 |          |      |  |                    |         |
|          |                 |          |      |  |                    |         |
|          |                 |          |      |  |                    |         |
|          |                 |          |      |  |                    |         |
|          |                 |          |      |  |                    |         |
|          |                 |          |      |  |                    |         |
|          |                 |          |      |  |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 4 : Transformer Shifting**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description  | Quantity | Unit | Installation (Excluding Taxes) |                    | Remarks |
|----------|--|----------|------|--------------------------------|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>   |          |      |                                |                    |         |
| <b>5</b> | <b>Transportation of Power Transformer</b>   |          |      |                                |                    |         |
| 5.1      | Loading, Unloading and Transportation of 132/11kV, 30MVA Power Transformer from Pokhara to Bharatpur Substation  | 2        | Lots |                                |                    |         |
| 5.2      | Installation and Commissioning of 132/11kV, 30 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified   | 2        | Lots |                                |                    |         |
| 5.3      | Dismantling and Removal of 132/11kV, 22.5MVA Power Transformer at Bharatpur Substation   | 2        | Lots |                                |                    |         |
| 5.4      | Loading, Unloading and Transportation of 132/11kV, 22.5MVA Power Transformer from Bharatpur to Lekhnath Substation   | 1        | Lots |                                |                    |         |
| 5.5      | Installation and Commissioning of 132/11kV, 22.5 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (5)</b>   |          |      |                                |                    |         |
|          | <b>Total of Electrical Part (A)</b>  |          |      |                                |                    |         |
|          | <b>Grand Total of Schedule 4B</b>  |          |      |                                |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 4 : Transformer Shifting**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No. | Description           | Quantity | Unit | Civil Works (Excluding Taxes) |                    | Remarks |
|----------|-----------------------|----------|------|-------------------------------|--------------------|---------|
|          |                       |          |      | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)      | (2)                   | (3)      | (4)  | (5)                           | (6)=(3)x(5)        | (7)     |
|          |                       |          |      |                               |                    |         |
|          |                       |          |      |                               |                    |         |
|          |                       |          |      |                               |                    |         |
|          | <b>Not Applicable</b> |          |      |                               |                    |         |
|          |                       |          |      |                               |                    |         |
|          |                       |          |      |                               |                    |         |
|          |                       |          |      |                               |                    |         |
|          |                       |          |      |                               |                    |         |
|          |                       |          |      |                               |                    |         |
|          |                       |          |      |                               |                    |         |
|          |                       |          |      |                               |                    |         |
|          |                       |          |      |                               |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

Tender No. GOD/2078/079-06; Package 4 : Transformer Shifting

Price Schedule No. 5. Grand Summary ( Schedule Nos. 1 to 4)

| S.N.                              | Description   | Foreign Currency (USD) | Nepalese Rupees (NRs.) | Remarks |
|-----------------------------------|---|------------------------|------------------------|---------|
| 1                                 | Total Price Schedule No. 1. Plant, and Mandatory Spares Parts supplied from abroad                        |                        |                        |         |
| 2                                 | Total Price Schedule No. 2. Plant, and Mandatory Spares Parts supplied from within the Employer's country |                        |                        |         |
| 3                                 | Total Price Schedule No. 3. Design Services   |                        |                        |         |
| 4                                 | Schedule No. 4. Installation Services   |                        |                        |         |
| Part -A:                          | Local Transportation, Insurance and other Incidental services (including port clearance etc.)             |                        |                        |         |
| Part - B:                         | Installation Charges  |                        |                        |         |
| Part - C:                         | Civil Works   |                        |                        |         |
|                                   | Total of Price Schedule no.4: Installation and Other Services   |                        |                        |         |
| <b>Sub Total of Schedule No 4</b> |   |                        |                        |         |
| <b>Grand Total</b>                |   |                        |                        |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations  
(Schedules of Rates and Prices)**

[illegible]

  
  
 GOV. OF NEW SOUTH WALES  
 DEPARTMENT OF EDUCATION AND COMMUNITIES  
 New South Wales Government

# Price Schedules

**Tender No. GOD/2078/079-06; Package 5 : Lahan Substation**

## PREAMBLE

### A. General

|                   |  |
|-------------------|--|
| 1                 | <b>The Price Schedules are divided into separate Schedules as follows:</b>   |
| Schedule No. 1:   | Plant and Mandatory Spare Parts Supplied from Abroad   |
| Schedule No. 2:   | Plant and Mandatory Spare Parts Supplied from within the Employer's Country  |
| Schedule No. 3:   | Design Services (Not Applicable)   |
| Schedule No. 4:   | Installation and Other Services  |
| Schedule No. 5:   | Grand Summary  |
| Schedule No. 6:   | Recommended Spare Parts  |
| 2                 | The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.  |
| 3                 | If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.   |
| <b>B. Pricing</b> |  |
| 4                 | The units and rates in figures entered into the Price Schedules should be type written or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.<br>As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement. |
| 5                 | Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.<br>For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.<br>Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.   |
| 6                 | When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.  |
| 7                 | Bidders are instructed to quote the price schedule no. 1 (Plant, and Mandatory Spares Parts supplied from abroad) either in foreign currency (USD) or Nepalese Rupees (NRs.) and rest price schedule Price Schedule 2 (Plant, and Mandatory Spares Parts supplied Within Employer's Country) and Price Schedule No 4 (Installation Services) entirely in Nepalese Rupees (NRs).  |





**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 5 : Lahan Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit  | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|-------|----------|--|--------------|---------|
|          |   |                   |          |       |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)   |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |                   |          |       |          |  |              |         |
| <b>1</b> | <b>Main Items</b>   |                   |          |       |          |  |              |         |
| 1.1      | 33/11kV, 24 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified  |                   | 2        | Set   |          |  |              |         |
| 1.2      | 33kV, 30VA, 3 core Current Transformer 400-600-900/1A with all accessories  |                   | 6        | Nos   |          |  |              |         |
| 1.3      | 11kV, 30VA, 3 core Current Transformer 1200-1600/1A with all accessories  |                   | 6        | Nos   |          |  |              |         |
| 1.4      | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 11 kV Side (2 Cable per phase)                               |                   | 1800     | Metre |          |  |              |         |
| 1.5      | Tubular bus for 33 kV Bus including connector and all other accessories and hardwares required to complete the specified scope of work:   |                   | 1        | Lot   |          |  |              |         |
| 1.6      | Adaption work for Bus Bar Protection  |                   | 1        | Lot   |          |  |              |         |
| 1.7      | 33kV Post Insulator complete as specified   |                   | 3        | Nos   |          |  |              |         |
| 1.8      | 600 V Control Cable and Power cable required to complete the scope of work as specified   |                   | 2        | Lot   |          |  |              |         |
|          | <b>Sub Total (1)</b>  |                   |          |       |          |  |              |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |                   |          |       |          |  |              |         |
| 2.1      | ACSR conductors with necessary hardwares, clamps for connecting, with all accessories for substation works, complete as per the specified scope of works                                    |                   | 2        | Lots  |          |  |              |         |
|          | <b>Sub Total (2)</b>  |                   |          |       |          |  |              |         |
| <b>3</b> | <b>Grounding System</b>   |                   |          |       |          |  |              |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. |                   | 2        | Lots  |          |  |              |         |
|          | <b>Sub Total (3)</b>  |                   |          |       |          |  |              |         |
|          | <b>Total of Electrical Part (A)</b>   |                   |          |       |          |  |              |         |
| <b>B</b> | <b>Civil Part</b>   |                   |          |       |          |  |              |         |
| <b>4</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories:  |                   |          |       |          |  |              |         |
| 4.1      | Cable Support Structure for XLPE Cable in Transformer   |                   | 2        | Lots  |          |  |              |         |
|          | <b>Sub Total (4)</b>  |                   |          |       |          |  |              |         |
|          | <b>Total of Civil Part (B)</b>  |                   |          |       |          |  |              |         |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 5 : Lahan Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>C</b> | <b>Spare Part</b>   |                   |          |      |          |  |              |         |
| <b>5</b> | <b>Spare Parts for 33/11kV, 24MVA Power Transformer</b>     |                   |          |      |          |  |              |         |
| 5.1      | 33kV Phase Bushing, 11kV Bushing & Neutral Bushing (1 each) |                   | 2        | Sets |          |  |              |         |
| 5.2      | Dial Type Thermometer (OTI, WTI 1each)                      |                   | 2        | Nos  |          |  |              |         |
| 5.3      | Oil Level Gauge   |                   | 2        | Nos  |          |  |              |         |
| 5.4      | Indicating lamps (100% of used), Lot                        |                   | 2        | Lot  |          |  |              |         |
| 5.5      | All Types of Fuses (100% of used)                           |                   | 2        | Lot  |          |  |              |         |
| 5.6      | Complete Set of Gaskets                                     |                   | 2        | Set  |          |  |              |         |
| 5.7      | Complete set of Pressure Relief Device                      |                   | 2        | Set  |          |  |              |         |
| 5.8      | One BCT of each type  |                   | 2        | Nos  |          |  |              |         |
| 5.9      | Cooler Control Contactors                                   |                   | 2        | Nos  |          |  |              |         |
| 5.10     | OLTC Motor Contactor  |                   | 2        | Nos  |          |  |              |         |
| 5.11     | Complete set of Bucholz Relay                               |                   | 2        | Set  |          |  |              |         |
|          | <b>Sub Total of (5)</b>                                     |                   |          |      |          |  |              |         |
|          | <b>Total of Spare Part (C)</b>                              |                   |          |      |          |  |              |         |
|          | <b>Grand Total of Schedule 1</b>                            |                   |          |      |          |  |              |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

|      |  |
|------|--|
| Note | The prices shall be quoted either in the currency of Nepalese Rupees (NRs.) or foreign currency (USD) only as per ITB 19.1 of the BDS. |
|------|--|




**Tender No. GOD/2078/079-06; Package 5 : Lahan Substation**

1. If a Bidder wishes to Supply some item(s) listed in Price Schedule no. 1 from manufacturing plant in Nepal, then such item(s) and price of such item(s) shall be quoted in this Price Schedule no. 2 only. Columns against such item(s) shall be left blank in Price Schedule no. 1.
2. Item No. in the following table shall match those in Price Schedule no. 1

## Price Schedule 2. Plant, and Mandatory Spares Parts supplied Within Employer's Country

| Item No. | Description               | <i>Quantity</i> | <i>Unit</i> | Total EXW Price (Excluding Taxes and Duties) |                       | Remarks |
|----------|---------------------------|-----------------|-------------|--|-----------------------|---------|
|          |                           |                 |             | <i>Unit Price at<br/>EXW(NPR)</i>            | Total EXW Price (NPR) |         |
| (1)      | (2)                       | (3)             | (4)         | (5)  | (6)=(3)x(5)           | (7)     |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          | Grand Total of Schedule 2 |                 |             |  |                       |         |

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**

**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 5 : Lahan Substation**

**Price Schedule No 3: Design Services**

| Item | Description  | Qty.                  | Unit Price <sup>#</sup>      |  | Total Price <sup>#</sup> |                                       |
|------|--|-----------------------|------------------------------|--|--------------------------|---------------------------------------|
|      |  |                       | Local<br>Currency<br>Portion | Foreign<br>Currency<br>Portion<br>(optional) | LocalCurrency<br>Portion | Foreign currency<br>Portion(optional) |
| (1)  | (2)  | (3)                   | (4)                          | (5)  | (6)=(4)x(3)              | (7)=(5)x(3)                           |
|      | The scope of the Contract covers the detail design as well. The price of the detail design is deemed to have been covered in the prices of the other schedules | <b>Not Applicable</b> |                              |  |                          |                                       |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 5 : Lahan Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit  | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|-------|--|--------------------|---------|
|          |   |          |       | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)   | (5)  | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |       |  |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |       |  |                    |         |
| 1.1      | 33/11kV, 24 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified  | 2        | Set   |  |                    |         |
| 1.2      | 33kV, 30VA, 3 core Current Transformer 400-600-900/1A with all accessories  | 6        | Nos   |  |                    |         |
| 1.3      | 11kV, 30VA, 3 core Current Transformer 1200-1600/1A with all accessories  | 6        | Nos   |  |                    |         |
| 1.4      | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 11 kV Side (2 Cable per phase)                               | 1800     | Metre |  |                    |         |
| 1.5      | Tubular bus for 33 kV Bus including connector and all other accessories and hardwares required to complete the specified scope of work:   | 1        | Lot   |  |                    |         |
| 1.6      | Adaption work for Bus Bar Protection  | 1        | Lot   |  |                    |         |
| 1.7      | 33kV Post Insulator complete as specified   | 3        | Nos   |  |                    |         |
| 1.8      | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 2        | Lot   |  |                    |         |
|          | <b>Sub Total (1)</b>  |          |       |  |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |       |  |                    |         |
| 2.1      | ACSR conductors with necessary hardwares, clamps for connecting, with all accessories for substation works, complete as per the specified scope of works                                    | 2        | Lots  |  |                    |         |
|          | <b>Sub Total (2)</b>  |          |       |  |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |       |  |                    |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. | 2        | Lots  |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 5 : Lahan Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
|          | <b>Sub Total (3)</b>   |          |      |  |                    |         |
|          | <b>Total of Electrical Part (A)</b>  |          |      |  |                    |         |
| <b>B</b> | <b>Civil Part</b>  |          |      |  |                    |         |
| <b>4</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories: |          |      |  |                    |         |
| 4.1      | Cable Support Structure for XLPE Cable in Transformer  | 2        | Lots |  |                    |         |
|          | <b>Sub Total (4)</b>   |          |      |  |                    |         |
|          | <b>Total of Civil Part (B)</b>   |          |      |  |                    |         |
| <b>C</b> | <b>Spare Part</b>  |          |      |  |                    |         |
| <b>5</b> | <b>Spare Parts for 33/11kV, 24MVA Power Transformer</b>  |          |      |  |                    |         |
| 5.1      | 33kV Phase Bushing, 11kV Bushing & Neutral Bushing (1 each)  | 2        | Sets |  |                    |         |
| 5.2      | Dial Type Thermometer (OTI, WTI 1each)   | 2        | Nos  |  |                    |         |
| 5.3      | Oil Level Gauge  | 2        | Nos  |  |                    |         |
| 5.4      | Indicating lamps (100% of used), Lot   | 2        | Lot  |  |                    |         |
| 5.5      | All Types of Fuses (100% of used)  | 2        | Lot  |  |                    |         |
| 5.6      | Complete Set of Gaskets  | 2        | Set  |  |                    |         |
| 5.7      | Complete set of Pressure Relief Device   | 2        | Set  |  |                    |         |
| 5.8      | One BCT of each type   | 2        | Nos  |  |                    |         |
| 5.9      | Cooler Control Contactors  | 2        | Nos  |  |                    |         |
| 5.10     | OLTC Motor Contactor   | 2        | Nos  |  |                    |         |
| 5.11     | Complete set of Bucholz Relay  | 2        | Set  |  |                    |         |
|          | <b>Sub Total of (5)</b>  |          |      |  |                    |         |
|          | <b>Total of Spare Part (C)</b>   |          |      |  |                    |         |
|          | <b>Grand Total of Schedule 4A</b>  |          |      |  |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 5 : Lahan Substation

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit  | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|-------|--------------------------------|--------------------|---------|
|          |   |          |       | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)   | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |       |                                |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |       |                                |                    |         |
| 1.1      | 33/11kV, 24 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified  | 2        | Set   |                                |                    |         |
| 1.2      | 33kV, 30VA, 3 core Current Transformer 400-600-900/1A with all accessories  | 6        | Nos   |                                |                    |         |
| 1.3      | 11kV, 30VA, 3 core Current Transformer 1200-1600/1A with all accessories  | 6        | Nos   |                                |                    |         |
| 1.4      | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 11 kV Side (2 Cable per phase)                               | 1800     | Metre |                                |                    |         |
| 1.5      | Tubular bus for 33 kV Bus including connector and all other accessories and hardwares required to complete the specified scope of work:   | 1        | Lot   |                                |                    |         |
| 1.6      | Adaption work for Bus Bar Protection  | 1        | Lot   |                                |                    |         |
| 1.7      | 33kV Post Insulator complete as specified   | 3        | Nos   |                                |                    |         |
| 1.8      | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 2        | Lot   |                                |                    |         |
|          | <b>Sub Total (1)</b>  |          |       |                                |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |       |                                |                    |         |
| 2.1      | ACSR conductors with necessary hardwares, clamps for connecting, with all accessories for substation works, complete as per the specified scope of works                                    | 2        | Lots  |                                |                    |         |
|          | <b>Sub Total (2)</b>  |          |       |                                |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |       |                                |                    |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. | 2        | Lots  |                                |                    |         |
|          | <b>Sub Total (3)</b>  |          |       |                                |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |       |                                |                    |         |
|          | <b>Grand Total of Schedule 4B</b>   |          |       |                                |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 5 : Lahan Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No.                          | Description  | Quantity | Unit  | Civil Works (Excluding Taxes) |                    | Remarks |
|-----------------------------------|--|----------|-------|-------------------------------|--------------------|---------|
|                                   |  |          |       | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)                               | (2)  | (3)      | (4)   | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>A</b>                          | <b>Civil Works</b>   |          |       |                               |                    |         |
| 1                                 | <b>Steel Structure &amp; Rail</b>  |          |       |                               |                    |         |
| 1.1                               | Cable Support Structure for XLPE cable in Transformer  | 2        | Lots  |                               |                    |         |
|                                   | <b>Sub Total (1)</b>   |          |       |                               |                    |         |
| 2                                 | <b>Reinforced Cement Concrete Foundation for Steel Structures</b> complete excavation, backfilling, forms, concrete works and reinforcement bars |          |       |                               |                    |         |
| 2.1                               | Modification of Foundation for Transformer with Rail for the load of 2*24MVA Power Transformer   | 30       | Cu.m. |                               |                    |         |
|                                   | <b>Sub Total (2)</b>   |          |       |                               |                    |         |
| <b>3</b>                          | <b>Dismantling Works</b>   |          |       |                               |                    |         |
| 3.1                               | Dismantling and Removal of 33/11 kV 16.6 MVA Transformer and its accessories to safe location within Substation compound                         | 2        | Lots  |                               |                    |         |
| 3.2                               | Dismantling & Removal of Existing 33kV C.T   | 2        | Lots  |                               |                    |         |
| 3.3                               | Dismantling of Cable   | 2        | Lots  |                               |                    |         |
| 3.4                               | Dismantling of existing 33kV Bus   | 1        | Lots  |                               |                    |         |
|                                   | <b>Sub Total (3)</b>   |          |       |                               |                    |         |
| <b>Grand Total of Schedule 4C</b> |  |          |       |                               |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

Tender No. GOD/2078/079-06; Package 5 : Lahan Substation

Price Schedule No. 5. Grand Summary ( Schedule Nos. 1 to 4)

| S.N.                              | Description   | Foreign Currency (USD) | Nepalese Rupees (NRs.) | Remarks |
|-----------------------------------|---|------------------------|------------------------|---------|
| 1                                 | Total Price Schedule No. 1. Plant, and Mandatory Spares Parts supplied from abroad                        |                        |                        |         |
| 2                                 | Total Price Schedule No. 2. Plant, and Mandatory Spares Parts supplied from within the Employer's country |                        |                        |         |
| 3                                 | Total Price Schedule No. 3. Design Services   |                        |                        |         |
| 4                                 | Schedule No. 4. Installation Services   |                        |                        |         |
| Part -A:                          | Local Transportation, Insurance and other Incidental services (including port clearance etc.)             |                        |                        |         |
| Part - B:                         | Installation Charges  |                        |                        |         |
| Part - C:                         | Civil Works   |                        |                        |         |
|                                   | Total of Price Schedule no.4: Installation and Other Services   |                        |                        |         |
| <b>Sub Total of Schedule No 4</b> |   |                        |                        |         |
| <b>Grand Total</b>                |   |                        |                        |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations  
(Schedules of Rates and Prices)**

### Schedule No.6. Recommended Spare Parts

| Item         | Description | Qty. | Unit Price <sup>#</sup>       |                      | Total Price <sup>#</sup> |
|--------------|-------------|------|-------------------------------|----------------------|--------------------------|
|              |             |      | CIF or CIP<br>(Foreign Parts) | EXW<br>(Local Parts) |                          |
| (1)          | (2)         | (3)  | (4)                           | (5)                  | (6)                      |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
| <b>TOTAL</b> |             |      |                               |                      |                          |

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

# Price Schedules

**Tender No. GOD/2078/079-06; Package 6 : Dhalkebar Substation**

## PREAMBLE

### A. General

|                   |  |
|-------------------|--|
| 1                 | <b>The Price Schedules are divided into separate Schedules as follows:</b>   |
| Schedule No. 1:   | Plant and Mandatory Spare Parts Supplied from Abroad   |
| Schedule No. 2:   | Plant and Mandatory Spare Parts Supplied from within the Employer's Country  |
| Schedule No. 3:   | Design Services (Not Applicable)   |
| Schedule No. 4:   | Installation and Other Services  |
| Schedule No. 5:   | Grand Summary  |
| Schedule No. 6:   | Recommended Spare Parts  |
| 2                 | The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.  |
| 3                 | If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.   |
| <b>B. Pricing</b> |  |
| 4                 | The units and rates in figures entered into the Price Schedules should be type written or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.<br>As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement. |
| 5                 | Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.<br>For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.<br>Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.   |
| 6                 | When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.  |
| 7                 | Bidders are instructed to quote the price schedule no. 1 (Plant, and Mandatory Spares Parts supplied from abroad) either in foreign currency (USD) or Nepalese Rupees (NRs.) and rest price schedule Price Schedule 2 (Plant, and Mandatory Spares Parts supplied Within Employer's Country) and Price Schedule No 4 (Installation Services) entirely in Nepalese Rupees (NRs).  |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 6 : Dhalkebar Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |                   |          |      |          |  |              |         |
| <b>1</b> | <b>Main Items</b>   |                   |          |      |          |  |              |         |
| 1.1      | 132/33kV, 100 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified   |                   | 2        | Set  |          |  |              |         |
| 1.2      | 33kV, Outdoor Vacuum Circuit Breaker, three Pole type Complete with all accessories and Steel Structure as specified  |                   | 2        | Set  |          |  |              |         |
| 1.3      | 33 kV Disconnecting Switch without earth switch complete with all accessories and Steel Structure as specified  |                   | 2        | Set  |          |  |              |         |
| 1.4      | 33 kV Disconnecting Switch with earth switch complete with all accessories and Steel Structure as specified   |                   | 2        | Set  |          |  |              |         |
| 1.5      | 33 kV, 30 VA, 3 core current transformer 1800-2000/1A, complete with all accessories  |                   | 6        | Nos. |          |  |              |         |
| 1.6      | Tubular bus of suitable size for 33 kV Bus including connectors and all other accessories and hardware required to complete the specified scope of work:  |                   | 1        | Lot  |          |  |              |         |
| 1.7      | Adaption work for Bus Bar Protection  |                   | 1        | Lot  |          |  |              |         |
| 1.8      | 33kV Post Insulator with Steel Structure complete as specified  |                   | 6        | Nos  |          |  |              |         |
| 1.9      | 600 V Control Cable and Power cable required to complete the scope of work as specified   |                   | 2        | Lot  |          |  |              |         |
|          | <b>Sub Total (1)</b>  |                   |          |      |          |  |              |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |                   |          |      |          |  |              |         |
| 2.1      | ACSR conductors with necessary hardware, clamps for connecting, with all accessories for substation works, complete as per the specified scope of works   |                   | 2        | Lots |          |  |              |         |
|          | <b>Sub Total (2)</b>  |                   |          |      |          |  |              |         |
| <b>3</b> | <b>Grounding System</b>   |                   |          |      |          |  |              |         |
| 3.1      | Earthing of Transformer, Circuit Breaker and other Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete |                   | 2        | Lots |          |  |              |         |
|          | <b>Sub Total (3)</b>  |                   |          |      |          |  |              |         |
|          | <b>Total of Electrical Part (A)</b>   |                   |          |      |          |  |              |         |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 6 : Dhalkebar Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description  | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>B</b> | <b>Spare Part</b>  |                   |          |      |          |  |              |         |
| 4        | <b>For 132/33kV, 100MVA Power Transformer</b>                |                   |          |      |          |  |              |         |
| 4.1      | 132kV Phase Bushing, 33kV Bushing & Neutral Bushing (1 each) |                   | 2        | Set  |          |  |              |         |
| 4.2      | Dial Type Thermometer (OTI, WTI 1each)                       |                   | 2        | set  |          |  |              |         |
| 4.3      | Oil Level Gauge  |                   | 2        | set  |          |  |              |         |
| 4.4      | Indicating lamps (100% of used), Lot                         |                   | 2        | lot  |          |  |              |         |
| 4.5      | All Types of Fuses (100% of used), Lot                       |                   | 2        | lot  |          |  |              |         |
| 4.6      | Complete Set of Gaskets                                      |                   | 2        | lot  |          |  |              |         |
| 4.7      | Complete set of Pressure Relief Device                       |                   | 2        | set  |          |  |              |         |
| 4.8      | One BCT of each type   |                   | 2        | Lot  |          |  |              |         |
| 4.9      | Cooler Control Contactors                                    |                   | 2        | Lot  |          |  |              |         |
| 4.10     | OLTC Motor Contactor, Nos                                    |                   | 2        | Nos  |          |  |              |         |
| 4.11     | Complete set of Bucholz Relay                                |                   | 2        | set  |          |  |              |         |
|          | <b>Sub Total of (4)</b>                                      |                   |          |      |          |  |              |         |
| 5        | <b>For 33kV Vacuum Circuit Breaker</b>                       |                   |          |      |          |  |              |         |
| 5.1      | Tripping Coils, Nos  |                   | 6        | Nos  |          |  |              |         |
| 5.2      | Closing Coils, Nos   |                   | 6        | Nos  |          |  |              |         |
| 5.3      | Relays and Contactors (One of each type), Sets               |                   | 2        | Sets |          |  |              |         |
| 5.4      | Motor for Mechanism, Set                                     |                   | 2        | Nos  |          |  |              |         |
| 5.5      | Interrupter for VCB, No                                      |                   | 2        | Nos  |          |  |              |         |
|          | <b>Sub Total of (5)</b>                                      |                   |          |      |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 6 : Dhalkebar Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description                            | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)                                    |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 6        | <b>For 33kV Disconnecting Switches</b> |                   |          |      |          |  |              |         |
| 6.1      | Main contact assemblies, Set           |                   | 2        | Sets |          |  |              |         |
| 6.2      | Auxiliary contacts, Set                |                   | 2        | Sets |          |  |              |         |
| 6.3      | Interlocking coil, Set                 |                   | 2        | Sets |          |  |              |         |
|          | <b>Sub Total of (6)</b>                |                   |          |      |          |  |              |         |
|          | <b>Total of Spare Part (B)</b>         |                   |          |      |          |  |              |         |
|          | <b>Grand Total of Schedule 1</b>       |                   |          |      |          |  |              |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

|      |  |
|------|--|
| Note | The prices shall be quoted either in the currency of Nepalese Rupees (NRs.) or foreign currency (USD) only as per ITB 19.1 of the BDS. |
|------|--|




**Tender No. GOD/2078/079-06; Package 6 : Dhalkebar Substation**

1. If a Bidder wishes to Supply some item(s) listed in Price Schedule no. 1 from manufacturing plant in Nepal, then such item(s) and price of such item(s) shall be quoted in this Price Schedule no. 2 only. Columns against such item(s) shall be left blank in Price Schedule no. 1.
2. Item No. in the following table shall match those in Price Schedule no. 1

### Price Schedule 2. Plant, and Mandatory Spares Parts supplied Within Employer's Country

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**

**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 6 : Dhalkebar Substation**

**Price Schedule No 3: Design Services**

| Item | Description  | Qty.                  | Unit Price <sup>#</sup>      |  | Total Price <sup>#</sup> |                                       |
|------|--|-----------------------|------------------------------|--|--------------------------|---------------------------------------|
|      |  |                       | Local<br>Currency<br>Portion | Foreign<br>Currency<br>Portion<br>(optional) | LocalCurrency<br>Portion | Foreign currency<br>Portion(optional) |
| (1)  | (2)  | (3)                   | (4)                          | (5)  | (6)=(4)x(3)              | (7)=(5)x(3)                           |
|      | The scope of the Contract covers the detail design as well. The price of the detail design is deemed to have been covered in the prices of the other schedules | <b>Not Applicable</b> |                              |  |                          |                                       |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_






# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 6 : Dhalkebar Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|------|--|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |      |  |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |      |  |                    |         |
| 1.1      | 132/33kV, 100 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified             | 2        | Set  |  |                    |         |
| 1.2      | 33kV, Outdoor Vacuum Circuit Breaker, three Pole type Complete with all accessories and Steel Structure as specified                                      | 2        | Set  |  |                    |         |
| 1.3      | 33 kV Disconnecting Switch without earth switch complete with all accessories and Steel Structure as specified  | 2        | Set  |  |                    |         |
| 1.4      | 33 kV Disconnecting Switch with earth switch complete with all accessories and Steel Structure as specified   | 2        | Set  |  |                    |         |
| 1.5      | 33 kV, 30 VA, 3 core current transformer 1800-2000/1A, complete with all accessories  | 6        | Nos. |  |                    |         |
| 1.6      | Tubular bus of suitable size for 33 kV Bus including connectors and all other accessories and hardwares required to complete the specified scope of work: | 1        | Lot  |  |                    |         |
| 1.7      | Adaption work for Bus Bar Protection  | 1        | Lot  |  |                    |         |
| 1.8      | 33kV Post Insulator with Steel Structure complete as specified  | 6        | Nos  |  |                    |         |
| 1.9      | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 2        | Lot  |  |                    |         |
|          | <b>Sub Total (1)</b>  |          |      |  |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |      |  |                    |         |
| 2.1      | ACSR conductors with necessary hardwares, clamps for connecting, with all accessories for substation works, complete as per the specified scope of works  | 2        | Lots |  |                    |         |
|          | <b>Sub Total (2)</b>  |          |      |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 6 : Dhalkebar Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|------|--|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| <b>3</b> | <b>Grounding System</b>   |          |      |  |                    |         |
| 3.1      | Earthing of Transformer, Circuit Breaker and other Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete | 2        | Lots |  |                    |         |
|          | <b>Sub Total (3)</b>  |          |      |  |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |      |  |                    |         |
| <b>B</b> | <b>Spare Part</b>   |          |      |  |                    |         |
| <b>4</b> | <b>For 132/33kV, 100MVA Power Transformer</b>   |          |      |  |                    |         |
| 4.1      | 132kV Phase Bushing, 33kV Bushing & Neutral Bushing (1 each)  | 2        | Set  |  |                    |         |
| 4.2      | Dial Type Thermometer (OTI, WTI 1each)  | 2        | set  |  |                    |         |
| 4.3      | Oil Level Gauge   | 2        | set  |  |                    |         |
| 4.4      | Indicating lamps (100% of used), Lot  | 2        | lot  |  |                    |         |
| 4.5      | All Types of Fuses (100% of used), Lot  | 2        | lot  |  |                    |         |
| 4.6      | Complete Set of Gaskets   | 2        | lot  |  |                    |         |
| 4.7      | Complete set of Pressure Relief Device  | 2        | set  |  |                    |         |
| 4.8      | One BCT of each type  | 2        | Lot  |  |                    |         |
| 4.9      | Cooler Control Contactors   | 2        | Lot  |  |                    |         |
| 4.10     | OLTC Motor Contactor, Nos   | 2        | Nos  |  |                    |         |
| 4.11     | Complete set of Bucholz Relay   | 2        | set  |  |                    |         |
|          | <b>Sub Total of (4)</b>   |          |      |  |                    |         |
| <b>5</b> | <b>For 33kV Vacuum Circuit Breaker</b>  |          |      |  |                    |         |
| 5.1      | Tripping Coils, Nos   | 6        | Nos  |  |                    |         |
| 5.2      | Closing Coils, Nos  | 6        | Nos  |  |                    |         |
| 5.3      | Relays and Contactors (One of each type), Sets  | 2        | Sets |  |                    |         |
| 5.4      | Motor for Mechanism, Set  | 2        | Nos  |  |                    |         |
| 5.5      | Interrupter for VCB, No   | 2        | Nos  |  |                    |         |
|          | <b>Sub Total of (5)</b>   |          |      |  |                    |         |




# Nepal Electricity Authority

Transmission Directorate

Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations

(Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 6 : Dhalkebar Substation

## Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description                            | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)                                    | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 6        | <b>For 33kV Disconnecting Switches</b> |          |      |  |                    |         |
| 6.1      | Main contact assemblies, Set           | 2        | Sets |  |                    |         |
| 6.2      | Auxiliary contacts, Set                | 2        | Sets |  |                    |         |
| 6.3      | Interlocking coil, Set                 | 2        | Sets |  |                    |         |
|          | <b>Sub Total of (6)</b>                |          |      |  |                    |         |
|          | <b>Total of Spare Part (B)</b>         |          |      |  |                    |         |
|          | <b>Grand Total of Schedule 4A</b>      |          |      |  |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations

#### (Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 6 : Dhalkebar Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|------|--------------------------------|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |      |                                |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |      |                                |                    |         |
| 1.1      | 132/33kV, 100 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified             | 2        | Set  |                                |                    |         |
| 1.2      | 33kV, Outdoor Vacuum Circuit Breaker, three Pole type Complete with all accessories and Steel Structure as specified                                      | 2        | Set  |                                |                    |         |
| 1.3      | 33 kV Disconnecting Switch without earth switch complete with all accessories and Steel Structure as specified  | 2        | Set  |                                |                    |         |
| 1.4      | 33 kV Disconnecting Switch with earth switch complete with all accessories and Steel Structure as specified   | 2        | Set  |                                |                    |         |
| 1.5      | 33 kV, 30 VA, 3 core current transformer 1800-2000/1A, complete with all accessories  | 6        | Nos. |                                |                    |         |
| 1.6      | Tubular bus of suitable size for 33 kV Bus including connectors and all other accessories and hardwares required to complete the specified scope of work: | 1        | Lot  |                                |                    |         |
| 1.7      | Adaption work for Bus Bar Protection  | 1        | Lot  |                                |                    |         |
| 1.8      | 33kV Post Insulator with Steel Structure complete as specified  | 6        | Nos  |                                |                    |         |
| 1.9      | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 2        | Lot  |                                |                    |         |
|          | <b>Sub Total (1)</b>  |          |      |                                |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |      |                                |                    |         |
| 2.1      | ACSR conductors with necessary hardwares, clamps for connecting, with all accessories for substation works, complete as per the specified scope of works  | 2        | Lots |                                |                    |         |
|          | <b>Sub Total (2)</b>  |          |      |                                |                    |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 6 : Dhalkebar Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|------|--------------------------------|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>3</b> | <b>Grounding System</b>   |          |      |                                |                    |         |
| 3.1      | Earthing of Transformer, Circuit Breaker and other Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete | 2        | Lots |                                |                    |         |
|          | <b>Sub Total (3)</b>  |          |      |                                |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |      |                                |                    |         |
|          | <b>Grand Total of Schedule 4B</b>   |          |      |                                |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 6 : Dhalkebar Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No.                          | Description  | Quantity | Unit  | Civil Works (Excluding Taxes) |                    | Remarks |
|-----------------------------------|--|----------|-------|-------------------------------|--------------------|---------|
|                                   |  |          |       | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)                               | (2)  | (3)      | (4)   | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>A</b>                          | <b>Civil Works</b>   |          |       |                               |                    |         |
| <b>1</b>                          | <b>Reinforced Cement Concrete Foundation for Steel Structures</b> complete excavation, backfilling, forms, concrete works and reinforcement bars |          |       |                               |                    |         |
| 1.1                               | Modification of Foundation for Transformer with Rail for the load of 100 MVA Power Transformer   | 100      | Cu.m. |                               |                    |         |
|                                   | <b>Sub Total (1)</b>   |          |       |                               |                    |         |
| <b>2</b>                          | <b>Dismantling Works</b>   |          |       |                               |                    |         |
| 2.1                               | Dismantling and Removal of 132/33 kV 63 MVA and 132/33 kV 30 MVA Transformer and its accessories to safe location within Substation compound     | 2        | Lots  |                               |                    |         |
| 2.2                               | Dismantling & Removal of Existing 132kV & 33kV CT  | 2        | Lots  |                               |                    |         |
| 2.3                               | Dismantling & Removal of Existing 33kV Bus   | 2        | Lots  |                               |                    |         |
|                                   | <b>Sub Total (2)</b>   |          |       |                               |                    |         |
| <b>Grand Total of Schedule 4C</b> |  |          |       |                               |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

Tender No. GOD/2078/079-06; Package 6 : Dhalkebar Substation

Price Schedule No. 5. Grand Summary ( Schedule Nos. 1 to 4)

| S.N.                              | Description   | Foreign Currency (USD) | Nepalese Rupees (NRs.) | Remarks |
|-----------------------------------|---|------------------------|------------------------|---------|
| 1                                 | Total Price Schedule No. 1. Plant, and Mandatory Spares Parts supplied from abroad                        |                        |                        |         |
| 2                                 | Total Price Schedule No. 2. Plant, and Mandatory Spares Parts supplied from within the Employer's country |                        |                        |         |
| 3                                 | Total Price Schedule No. 3. Design Services   |                        |                        |         |
| 4                                 | Schedule No. 4. Installation Services   |                        |                        |         |
| Part -A:                          | Local Transportation, Insurance and other Incidental services (including port clearance etc.)             |                        |                        |         |
| Part - B:                         | Installation Charges  |                        |                        |         |
| Part - C:                         | Civil Works   |                        |                        |         |
|                                   | Total of Price Schedule no.4: Installation and Other Services   |                        |                        |         |
| <b>Sub Total of Schedule No 4</b> |   |                        |                        |         |
| <b>Grand Total</b>                |   |                        |                        |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations  
(Schedules of Rates and Prices)**

### Schedule No.6. Recommended Spare Parts

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_



# Price Schedules

**Tender No. GOD/2078/079-06; Package 7 : Chapur Substation**

## PREAMBLE

### A. General

|                   |  |
|-------------------|--|
| 1                 | <b>The Price Schedules are divided into separate Schedules as follows:</b>   |
| Schedule No. 1:   | Plant and Mandatory Spare Parts Supplied from Abroad   |
| Schedule No. 2:   | Plant and Mandatory Spare Parts Supplied from within the Employer's Country  |
| Schedule No. 3:   | Design Services (Not Applicable)   |
| Schedule No. 4:   | Installation and Other Services  |
| Schedule No. 5:   | Grand Summary  |
| Schedule No. 6:   | Recommended Spare Parts  |
| 2                 | The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.  |
| 3                 | If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.   |
| <b>B. Pricing</b> |  |
| 4                 | The units and rates in figures entered into the Price Schedules should be type written or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.<br>As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement. |
| 5                 | Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.<br>For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.<br>Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.   |
| 6                 | When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.  |
| 7                 | Bidders are instructed to quote the price schedule no. 1 (Plant, and Mandatory Spares Parts supplied from abroad) either in foreign currency (USD) or Nepalese Rupees (NRs.) and rest price schedule Price Schedule 2 (Plant, and Mandatory Spares Parts supplied Within Employer's Country) and Price Schedule No 4 (Installation Services) entirely in Nepalese Rupees (NRs).  |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 7 : Chapur Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit  | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|-------|----------|--|--------------|---------|
|          |   |                   |          |       |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)   |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |                   |          |       |          |  |              |         |
| <b>1</b> | <b>Main Items</b>   |                   |          |       |          |  |              |         |
| 1.1      | 33kV, 30 VA 5 core Current Transformer (300-600-900/1) with all accessories, as specified.  |                   | 3        | Nos.  |          |  |              |         |
| 1.2      | 33/11kV Transformer Control & Relay Panel, complete with all accessories  |                   | 1        | Set   |          |  |              |         |
| 1.3      | 33kV, Outdoor Vacuum Circuit Breaker, three Pole type Complete with all accessories and Steel Structure as specified  |                   | 1        | Set   |          |  |              |         |
| 1.4      | 33 kV Disconnecting Switch without earth switch complete with all accessories as specified  |                   | 1        | Set   |          |  |              |         |
| 1.5      | 33 kV Disconnecting Switch with earth switch complete with all accessories as specified   |                   | 1        | Set   |          |  |              |         |
| 1.6      | 33kV Post Insulator complete as specified   |                   | 3        | Nos   |          |  |              |         |
| 1.7      | 33kV, 30 VA 5 core Current Transformer(1200-1600/1) with all accessories, as specified.   |                   | 3        | Nos.  |          |  |              |         |
| 1.8      | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 11 kV Side (2 Cable per phase) |                   | 900      | Metre |          |  |              |         |
| 1.9      | <b>11 kV Switchgear</b>   |                   |          |       |          |  |              |         |
| 1.9.1    | 11 kV Incomer Panel, 2000 A   |                   | 1        | Nos.  |          |  |              |         |
| 1.9.2    | 11 kV Outgoing Panel, 1250 A  |                   | 4        | Nos.  |          |  |              |         |
| 1.9.3    | 11kV Bus Coupler Panel, 2000 A  |                   | 1        | Nos.  |          |  |              |         |
| 1.10     | 600 V Control Cable and Power cable required to complete the scope of work as specified   |                   | 1        | Lot   |          |  |              |         |
|          | <b>Sub Total (1)</b>  |                   |          |       |          |  |              |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |                   |          |       |          |  |              |         |
| 2.1      | 33kV Insulator strings with clamps to complete the specified scope of works   |                   | 1        | Lots  |          |  |              |         |
| 2.2      | Aluminium Pipe of suitable size for 33kV Interconnection with clamps and all accessories as used in the substation as per specification                       |                   | 1        | Lot   |          |  |              |         |
| 2.3      | ACSR conductors of suitable size for connecting with clamps and all accessories for 33kV Bus Bar Extension  |                   | 1        | Lot   |          |  |              |         |
|          | <b>Sub Total (2)</b>  |                   |          |       |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 7 : Chapur Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>3</b> | <b>Grounding System</b>   |                   |          |      |          |  |              |         |
| 3.1      | Earthing of Transformer, Circuit Breaker and other Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (3)</b>  |                   |          |      |          |  |              |         |
|          | <b>Total of Electrical Part (A)</b>   |                   |          |      |          |  |              |         |
| <b>B</b> | <b>Civil Part</b>   |                   |          |      |          |  |              |         |
| <b>4</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories:  |                   |          |      |          |  |              |         |
| 4.1      | 33kV Gantry of type existing at the substation  |                   | 1        | Lots |          |  |              |         |
| 4.2      | 33 kV, Disconnecting Switch   |                   | 2        | Lot  |          |  |              |         |
| 4.3      | 33kV Current Transformer  |                   | 6        | Lot  |          |  |              |         |
| 4.4      | 33kV Post Insulator   |                   | 3        | Lot  |          |  |              |         |
| 4.5      | Cable Support Structure   |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (4)</b>  |                   |          |      |          |  |              |         |
|          | <b>Total of Civil Part (B)</b>  |                   |          |      |          |  |              |         |
| <b>C</b> | <b>Spare Part</b>   |                   |          |      |          |  |              |         |
| <b>6</b> | <b>For 33kV Vacuum Circuit Breaker</b>  |                   |          |      |          |  |              |         |
| 6.1      | Tripping Coils, Nos   |                   | 3        | Nos. |          |  |              |         |
| 6.2      | Closing Coils, Nos  |                   | 3        | Nos. |          |  |              |         |
| 6.3      | Relays and Contactors (One of each type), Sets  |                   | 1        | Set  |          |  |              |         |
| 6.4      | Motor for Mechanism, Set  |                   | 1        | Nos. |          |  |              |         |
| 6.5      | Interrupter for VCB, No   |                   | 1        | Nos. |          |  |              |         |
|          | <b>Sub Total of (6)</b>   |                   |          |      |          |  |              |         |
| <b>7</b> | <b>For 33kV Disconnecting Switches</b>  |                   |          |      |          |  |              |         |
| 7.1      | Main contact assemblies, Set  |                   | 1        | Sets |          |  |              |         |
| 7.2      | Auxiliary contacts, Set   |                   | 1        | Sets |          |  |              |         |
| 7.3      | Interlocking coil, Set  |                   | 1        | Sets |          |  |              |         |
|          | <b>Sub Total of (7)</b>   |                   |          |      |          |  |              |         |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 7 : Chapur Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 8        | <b>For Control and Relay Panel</b>                                |                   |          |      |          |  |              |         |
| 8.1      | Indicating Lamps(100% of used)                                    |                   | 1        | Lot  |          |  |              |         |
| 8.2      | Fuses of each type(100% of used)                                  |                   | 1        | Lot  |          |  |              |         |
| 8.3      | Color caps for each color for indicating lamps(20% of used)       |                   | 1        | Lot  |          |  |              |         |
| 8.4      | One of each type of Switch, Relay, Timer and other Special Device |                   | 1        | Lot  |          |  |              |         |
| 8.5      | Each type of Auxiliary Relays(1each)                              |                   | 1        | lot  |          |  |              |         |
| 8.6      | <b>Protection Relays</b>  |                   |          |      |          |  |              |         |
| 8.6.1    | 3 Phase over current relays                                       |                   | 1        | Nos. |          |  |              |         |
| 8.6.2    | Ground Fault Relays   |                   |          |      |          |  |              |         |
| 8.6.3    | Differential Relay  |                   |          |      |          |  |              |         |
| 8.7      | Tripping Control Circuit Relays,                                  |                   | 1        | Nos. |          |  |              |         |
| 8.8      | Ammeter   |                   | 1        | Nos. |          |  |              |         |
| 8.9      | MVA Meter   |                   | 1        | Nos. |          |  |              |         |
| 8.10     | Volt meter  |                   | 1        | Nos. |          |  |              |         |
|          | <b>Sub Total of (8)</b>   |                   |          |      |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 7 : Chapur Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description                             | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)                                     |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 9        | <b>For 11 kV Vacuum Circuit Breaker</b> |                   |          |      |          |  |              |         |
| 9.1      | 11kV Vacuum Interrupter                 |                   | 1        | Nos. |          |  |              |         |
| 9.2      | Tripping Coils                          |                   | 3        | Nos. |          |  |              |         |
| 9.3      | Closing Coils                           |                   | 3        | Nos. |          |  |              |         |
| 9.4      | Spring Charging Motor                   |                   | 1        | Nos. |          |  |              |         |
| 9.5      | <b>Protection Relays</b>                |                   |          |      |          |  |              |         |
| 9.5.1    | 3 phase Overcurrent Relay               |                   | 1        | Set  |          |  |              |         |
| 9.5.2    | Ground Fault Relay                      |                   |          |      |          |  |              |         |
| 9.6      | Ammeter                                 |                   | 1        | Nos  |          |  |              |         |
| 9.7      | Voltmeter                               |                   | 1        | Nos  |          |  |              |         |
| 9.8      | kVA Meter                               |                   | 1        | Nos  |          |  |              |         |
| 9.9      | 11kV CTs as in Outgoing Feeder          |                   | 1        | Nos. |          |  |              |         |
| 9.10     | Operating Handle                        |                   | 1        | Nos  |          |  |              |         |
| 9.11     | Indicating lamps (100% of used)         |                   | 1        | Lot  |          |  |              |         |
|          | <b>Sub Total of (9)</b>                 |                   |          |      |          |  |              |         |
|          | <b>Total of Spare Part (C)</b>          |                   |          |      |          |  |              |         |
|          | <b>Grand Total of Schedule 1</b>        |                   |          |      |          |  |              |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

|      |  |
|------|--|
| Note | The prices shall be quoted either in the currency of Nepalese Rupees (NRs.) or foreign currency (USD) only as per ITB 19.1 of the BDS. |
|------|--|



**Tender No. GOD/2078/079-06; Package 7 : Chapur Substation**

1. If a Bidder wishes to Supply some item(s) listed in Price Schedule no. 1 from manufacturing plant in Nepal, then such item(s) and price of such item(s) shall be quoted in this Price Schedule no. 2 only. Columns against such item(s) shall be left blank in Price Schedule no. 1.
2. Item No. in the following table shall match those in Price Schedule no. 1

### Price Schedule 2. Plant, and Mandatory Spares Parts supplied Within Employer's Country

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**

**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 7 : Chapur Substation**

**Price Schedule No 3: Design Services**

| Item | Description  | Qty.                  | Unit Price <sup>#</sup> |                                     | Total Price <sup>#</sup> |                                    |
|------|--|-----------------------|-------------------------|-------------------------------------|--------------------------|------------------------------------|
|      |  |                       | Local Currency Portion  | Foreign Currency Portion (optional) | LocalCurrency Portion    | Foreign currency Portion(optional) |
| (1)  | (2)  | (3)                   | (4)                     | (5)                                 | (6)=(4)x(3)              | (7)=(5)x(3)                        |
|      | The scope of the Contract covers the detail design as well. The price of the detail design is deemed to have been covered in the prices of the other schedules | <b>Not Applicable</b> |                         |                                     |                          |                                    |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 7 : Chapur Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit  | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|-------|--|--------------------|---------|
|          |   |          |       | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)   | (5)  | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |       |  |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |       |  |                    |         |
| 1.1      | 33kV, 30 VA 5 core Current Transformer (300-600-900/1) with all accessories, as specified.  | 3        | Nos.  |  |                    |         |
| 1.2      | 33/11kV Transformer Control & Relay Panel, complete with all accessories  | 1        | Set   |  |                    |         |
| 1.3      | 33kV, Outdoor Vacuum Circuit Breaker, three Pole type Complete with all accessories and Steel Structure as specified  | 1        | Set   |  |                    |         |
| 1.4      | 33 kV Disconnecting Switch without earth switch complete with all accessories as specified  | 1        | Set   |  |                    |         |
| 1.5      | 33 kV Disconnecting Switch with earth switch complete with all accessories as specified   | 1        | Set   |  |                    |         |
| 1.6      | 33kV Post Insulator complete as specified   | 3        | Nos   |  |                    |         |
| 1.7      | 33kV, 30 VA 5 core Current Transformer(1200-1600/1) with all accessories, as specified.   | 3        | Nos.  |  |                    |         |
| 1.8      | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 11 kV Side (2 Cable per phase) | 900      | Metre |  |                    |         |
| 1.90     | <b>11 kV Switchgear</b>   |          |       |  |                    |         |
| 1.9.1    | 11 kV Incomer Panel, 2000 A   | 1        | Nos.  |  |                    |         |
| 1.9.2    | 11 kV Outgoing Panel, 1250 A  | 4        | Nos.  |  |                    |         |
| 1.9.3    | 11kV Bus Coupler Panel, 2000 A  | 1        | Nos.  |  |                    |         |






# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 7 : Chapur Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|------|--|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 1.10     | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 1        | Lot  |  |                    |         |
|          | <b>Sub Total (1)</b>  |          |      |  |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |      |  |                    |         |
| 2.1      | 33kV Insulator strings with clamps to complete the specified scope of works   | 1        | Lots |  |                    |         |
| 2.2      | Aluminium Pipe of suitable size for 33kV Interconnection with clamps and all accessories as used in the substation as per specification   | 1        | Lot  |  |                    |         |
| 2.3      | ACSR conductors of suitable size for connecting with clamps and all accessories for 33kV Bus Bar Extension  | 1        | Lot  |  |                    |         |
|          | <b>Sub Total (2)</b>  |          |      |  |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |      |  |                    |         |
| 3.1      | Earthing of Transformer, Circuit Breaker and other Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete | 1        | Lots |  |                    |         |
|          | <b>Sub Total (3)</b>  |          |      |  |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |      |  |                    |         |
| <b>B</b> | <b>Civil Part</b>   |          |      |  |                    |         |
| <b>4</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories:  |          |      |  |                    |         |
| 4.1      | 33kV Gantry of type existing at the substation  | 1        | Lots |  |                    |         |
| 4.2      | 33 kV, Disconnecting Switch   | 2        | Lot  |  |                    |         |
| 4.3      | 33kV Current Transformer  | 6        | Lot  |  |                    |         |
| 4.4      | 33kV Post Insulator   | 3        | Lot  |  |                    |         |
| 4.5      | Cable Support Structure   | 1        | Lots |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 7 : Chapur Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No.   | Description   | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|------------|---|----------|------|--|--------------------|---------|
|            |   |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)        | (2)   | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
|            | <b>Sub Total (4)</b>  |          |      |  |                    |         |
|            | <b>Total of Civil Part (B)</b>                                    |          |      |  |                    |         |
| <b>C</b>   | <b>Spare Part</b>   |          |      |  |                    |         |
| <b>6</b>   | <b>For 33kV Vacuum Circuit Breaker</b>                            |          |      |  |                    |         |
| 6.1        | Tripping Coils, Nos   | 3        | Nos. |  |                    |         |
| 6.2        | Closing Coils, Nos  | 3        | Nos. |  |                    |         |
| 6.3        | Relays and Contactors (One of each type), Sets                    | 1        | Set  |  |                    |         |
| 6.4        | Motor for Mechanism, Set  | 1        | Nos. |  |                    |         |
| 6.5        | Interrupter for VCB, No   | 1        | Nos. |  |                    |         |
|            | <b>Sub Total of (6)</b>   |          |      |  |                    |         |
| <b>7</b>   | <b>For 33kV Disconnecting Switches</b>                            |          |      |  |                    |         |
| 7.1        | Main contact assemblies, Set                                      | 1        | Sets |  |                    |         |
| 7.2        | Auxiliary contacts, Set   | 1        | Sets |  |                    |         |
| 7.3        | Interlocking coil, Set  | 1        | Sets |  |                    |         |
|            | <b>Sub Total of (7)</b>   |          |      |  |                    |         |
| <b>8</b>   | <b>For Control and Relay Panel</b>                                |          |      |  |                    |         |
| 8.1        | Indicating Lamps(100% of used)                                    | 1        | Lot  |  |                    |         |
| 8.2        | Fuses of each type(100% of used)                                  | 1        | Lot  |  |                    |         |
| 8.3        | Color caps for each color for indicating lamps(20% of used)       | 1        | Lot  |  |                    |         |
| 8.4        | One of each type of Switch, Relay, Timer and other Special Device | 1        | Lot  |  |                    |         |
| 8.5        | Each type of Auxiliary Relays(1each)                              | 1        | lot  |  |                    |         |
| <b>8.6</b> | <b>Protection Relays</b>  |          |      |  |                    |         |
| 8.6.1      | 3 Phase over current relays                                       | 1        | Nos. |  |                    |         |
| 8.6.2      | Ground Fault Relays   |          |      |  |                    |         |
| 8.6.3      | Differential Relay  | 1        | Nos. |  |                    |         |
| 8.7        | Tripping Control Circuit Relays,                                  | 1        | Nos. |  |                    |         |
| 8.8        | Ammeter   | 1        | Nos. |  |                    |         |
| 8.9        | MVA Meter   | 1        | Nos. |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 7 : Chapur Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description                             | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|------|--|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)                                     | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 8.10     | Volt meter                              | 1        | Nos. |  |                    |         |
|          | <b>Sub Total of (8)</b>                 |          |      |  |                    |         |
| 9        | <b>For 11 kV Vacuum Circuit Breaker</b> |          |      |  |                    |         |
| 9.1      | 11kV Vacuum Interrupter                 | 1        | Nos. |  |                    |         |
| 9.2      | Tripping Coils                          | 3        | Nos. |  |                    |         |
| 9.3      | Closing Coils                           | 3        | Nos. |  |                    |         |
| 9.4      | Spring Charging Motor                   | 1        | Nos. |  |                    |         |
| 9.5      | <b>Protection Relays</b>                |          |      |  |                    |         |
| 9.5.1    | 3 phase Overcurrent Relay               | 1        | Set  |  |                    |         |
| 9.5.2    | Ground Fault Relay                      |          |      |  |                    |         |
| 9.6      | Ammeter                                 | 1        | Nos  |  |                    |         |
| 9.7      | Voltmeter                               | 1        | Nos  |  |                    |         |
| 9.8      | kVA Meter                               | 1        | Nos  |  |                    |         |
| 9.9      | 11kV CTs as in Outgoing Feeder          | 1        | Nos. |  |                    |         |
| 9.10     | Operating Handle                        | 1        | Nos  |  |                    |         |
| 9.11     | Indicating lamps (100% of used)         | 1        | Lot  |  |                    |         |
|          | <b>Sub Total of (9)</b>                 |          |      |  |                    |         |
|          | <b>Total of Spare Part (C)</b>          |          |      |  |                    |         |
|          | <b>Grand Total of Schedule 4A</b>       |          |      |  |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 7 : Chapur Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit  | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|-------|--------------------------------|--------------------|---------|
|          |   |          |       | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)   | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |       |                                |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |       |                                |                    |         |
| 1.1      | 33/11 kV, 10/13.3/16.6 MVA Power transformer with OLTC,RTCC Facility, LA mounted on both side and Bushing CT complete with all accessories as specified. Facility:BCT & LA on both Voltage side | 1        | Set   |                                |                    |         |
| 1.2      | 33kV, 30 VA 5 core Current Transformer (300-600-900/1) with all accessories, as specified.  | 3        | Nos.  |                                |                    |         |
| 1.3      | 33/11kV Transformer Control & Relay Panel, complete with all accessories  | 1        | Set   |                                |                    |         |
| 1.4      | 33kV, Outdoor Vacuum Circuit Breaker, three Pole type Complete with all accessories and Steel Structure as specified  | 1        | Set   |                                |                    |         |
| 1.5      | 33 kV Disconnecting Switch without earth switch complete with all accessories as specified  | 1        | Set   |                                |                    |         |
| 1.6      | 33 kV Disconnecting Switch with earth switch complete with all accessories as specified   | 1        | Set   |                                |                    |         |
| 1.7      | 33kV Post Insulator complete as specified   | 3        | Nos   |                                |                    |         |
| 1.8      | 33kV, 30 VA 5 core Current Transformer(1200-1600/1) with all accessories, as specified.   | 3        | Nos.  |                                |                    |         |
| 1.9      | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 11 kV Side (2 Cable per phase)                                   | 900      | Metre |                                |                    |         |
| 1.10     | <b>11 kV Switchgear</b>   |          |       |                                |                    |         |
| 1.10.1   | 11 kV Incomer Panel, 2000 A   | 1        | Nos.  |                                |                    |         |
| 1.10.2   | 11 kV Outgoing Panel,1250 A   | 4        | Nos.  |                                |                    |         |
| 1.10.3   | 11kV Bus Coupler Panel, 2000 A  | 1        | Nos.  |                                |                    |         |
| 1.11     | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 1        | Lot   |                                |                    |         |
| 1.12     | Loading, Unloading and Transportation of 16.6MVA Power Transformer for shifting from Lahan to Chapur  | 1        | Lot   |                                |                    |         |
|          | <b>Sub Total (1)</b>  |          |       |                                |                    |         |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 7 : Chapur Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|------|--------------------------------|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |      |                                |                    |         |
| 2.1      | 33kV Insulator strings with clamps to complete the specified scope of works   | 1        | Lots |                                |                    |         |
| 2.2      | Aluminium Pipe of suitable size for 33kV Interconnection with clamps and all accessories as used in the substation as per specification   | 1        | Lot  |                                |                    |         |
| 2.3      | ACSR conductors of suitable size for connecting with clamps and all accessories for 33kV Bus Bar Extension  | 1        | Lot  |                                |                    |         |
|          | <b>Sub Total (2)</b>  |          |      |                                |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |      |                                |                    |         |
| 3.1      | Earthing of Transformer, Circuit Breaker and other Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (3)</b>  |          |      |                                |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |      |                                |                    |         |
|          | <b>Grand Total of Schedule 4B</b>   |          |      |                                |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**

**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**

(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 7 : Chapur Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No.                          | Description  | Quantity | Unit  | Civil Works (Excluding Taxes) |                    | Remarks |
|-----------------------------------|--|----------|-------|-------------------------------|--------------------|---------|
|                                   |  |          |       | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)                               | (2)  | (3)      | (4)   | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>A</b>                          | <b>Civil Works</b>   |          |       |                               |                    |         |
| <b>1</b>                          | <b>Steel Structure &amp; Rail</b>  |          |       |                               |                    |         |
| 1.1                               | 33kV Gantry of type existing at the substation   | 1        | Lots  |                               |                    |         |
| 1.2                               | 33 kV, Disconnecting Switch  | 2        | Lot   |                               |                    |         |
| 1.3                               | 33kV Current Transformer   | 6        | Lot   |                               |                    |         |
| 1.4                               | 33kV Post Insulator  | 3        | Lot   |                               |                    |         |
| 1.5                               | Cable Support Structure  | 1        | Lots  |                               |                    |         |
|                                   | <b>Sub Total (1)</b>   |          |       |                               |                    |         |
| <b>2</b>                          | <b>Reinforced Cement Concrete Foundation for Steel Structures</b> complete excavation, backfilling, forms, concrete works and reinforcement bars |          |       |                               |                    |         |
| 2.1                               | 33/11kV Transformer with Rail Track, Set   | 20       | Cu.m. |                               |                    |         |
| 2.2                               | 33kV, Outdoor Vacuum Circuit Breaker   | 1        | Lot   |                               |                    |         |
| 2.3                               | 33 kV, Disconnecting Switch  | 2        | Lot   |                               |                    |         |
| 2.4                               | 33kV Current Transformer   | 6        | Nos   |                               |                    |         |
| 2.5                               | 33kV Post Insulator  | 3        | Nos   |                               |                    |         |
| 2.6                               | 33kV Gantry of type existing at the substation   | 1        | Lot   |                               |                    |         |
|                                   | <b>Sub Total (2)</b>   |          |       |                               |                    |         |
| <b>3</b>                          | <b>Preliminary work</b>  |          |       |                               |                    |         |
| 3.1                               | Clearing and Stripping   | 1        | Lots  |                               |                    |         |
| 3.2                               | Site Grading, leveling   | 1        | Lots  |                               |                    |         |
| 3.3                               | Exploration works including laboratory test, soil test, resistivity test etc, complete.  | 1        | Lots  |                               |                    |         |
| 3.4                               | Crushed rock surfacing for switchyard  | 1        | Lots  |                               |                    |         |
|                                   | <b>Sub Total (3)</b>   |          |       |                               |                    |         |
| <b>Grand Total of Schedule 4C</b> |  |          |       |                               |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

Tender No. GOD/2078/079-06; Package 7 : Chapur Substation

Price Schedule No. 5. Grand Summary ( Schedule Nos. 1 to 4)

| S.N.                              | Description   | Foreign Currency (USD) | Nepalese Rupees (NRs.) | Remarks |
|-----------------------------------|---|------------------------|------------------------|---------|
| 1                                 | Total Price Schedule No. 1. Plant, and Mandatory Spares Parts supplied from abroad                        |                        |                        |         |
| 2                                 | Total Price Schedule No. 2. Plant, and Mandatory Spares Parts supplied from within the Employer's country |                        |                        |         |
| 3                                 | Total Price Schedule No. 3. Design Services   |                        |                        |         |
| 4                                 | Schedule No. 4. Installation Services   |                        |                        |         |
| Part -A:                          | Local Transportation, Insurance and other Incidental services (including port clearance etc.)             |                        |                        |         |
| Part - B:                         | Installation Charges  |                        |                        |         |
| Part - C:                         | Civil Works   |                        |                        |         |
|                                   | Total of Price Schedule no.4: Installation and Other Services   |                        |                        |         |
| <b>Sub Total of Schedule No 4</b> |   |                        |                        |         |
| <b>Grand Total</b>                |   |                        |                        |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations  
(Schedules of Rates and Prices)**

### Schedule No.6. Recommended Spare Parts

| Item         | Description | Qty. | Unit Price <sup>#</sup>       |                      | Total Price <sup>#</sup> |
|--------------|-------------|------|-------------------------------|----------------------|--------------------------|
|              |             |      | CIF or CIP<br>(Foreign Parts) | EXW<br>(Local Parts) |                          |
| (1)          | (2)         | (3)  | (4)                           | (5)                  | (6)                      |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
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|              |             |      |                               |                      |                          |
| <b>TOTAL</b> |             |      |                               |                      |                          |

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_



# Price Schedules

**Tender No. GOD/2078/079-06; Package 8 : Chanauta Substation**

## PREAMBLE

### A. General

|                   |  |
|-------------------|--|
| 1                 | <b>The Price Schedules are divided into separate Schedules as follows:</b>   |
| Schedule No. 1:   | Plant and Mandatory Spare Parts Supplied from Abroad   |
| Schedule No. 2:   | Plant and Mandatory Spare Parts Supplied from within the Employer's Country  |
| Schedule No. 3:   | Design Services (Not Applicable)   |
| Schedule No. 4:   | Installation and Other Services  |
| Schedule No. 5:   | Grand Summary  |
| Schedule No. 6:   | Recommended Spare Parts  |
| 2                 | The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.  |
| 3                 | If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.   |
| <b>B. Pricing</b> |  |
| 4                 | The units and rates in figures entered into the Price Schedules should be type written or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.<br>As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement. |
| 5                 | Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.<br>For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.<br>Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.   |
| 6                 | When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.  |
| 7                 | Bidders are instructed to quote the price schedule no. 1 (Plant, and Mandatory Spares Parts supplied from abroad) either in foreign currency (USD) or Nepalese Rupees (NRs.) and rest price schedule Price Schedule 2 (Plant, and Mandatory Spares Parts supplied Within Employer's Country) and Price Schedule No 4 (Installation Services) entirely in Nepalese Rupees (NRs).  |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 8 : Chanauta Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |                   |          |      |          |  |              |         |
| <b>1</b> | <b>Main Items</b>   |                   |          |      |          |  |              |         |
| 1.1      | 132 kV, 30 VA, 5 core current transformer 300-600-900/1A, complete with all accessories   |                   | 3        | Nos  |          |  |              |         |
| 1.2      | 33 kV, 30 VA, 3 core current transformer 1200-1600/1A, complete with all accessories  |                   | 3        | Nos. |          |  |              |         |
| 1.3      | 600 V Control Cable and Power cable required to complete the scope of work as specified   |                   | 1        | Lot  |          |  |              |         |
|          | <b>Sub Total (1)</b>  |                   |          |      |          |  |              |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |                   |          |      |          |  |              |         |
| 2.1      | Conductors of suitable size with connector and accessories to complete the scope of Work  |                   | 1        | Lots |          |  |              |         |
| 2.2      | 33kV Aluminium Bus suitable for 2500A with connector and accessories to complete the scope of Work  |                   | 1        | Lot  |          |  |              |         |
|          | <b>Sub Total (2)</b>  |                   |          |      |          |  |              |         |
| <b>3</b> | <b>Grounding System</b>   |                   |          |      |          |  |              |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (3)</b>  |                   |          |      |          |  |              |         |
|          | <b>Total of Electrical Part (A)</b>   |                   |          |      |          |  |              |         |
|          | <b>Grand Total of Schedule 1</b>  |                   |          |      |          |  |              |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

|      |  |
|------|--|
| Note | The prices shall be quoted either in the currency of Nepalese Rupees (NRs.) or foreign currency (USD) only as per ITB 19.1 of the BDS. |
|------|--|




**Tender No. GOD/2078/079-06; Package 8 : Chanauta Substation**

1. If a Bidder wishes to Supply some item(s) listed in Price Schedule no. 1 from manufacturing plant in Nepal, then such item(s) and price of such item(s) shall be quoted in this Price Schedule no. 2 only. Columns against such item(s) shall be left blank in Price Schedule no. 1.
2. Item No. in the following table shall match those in Price Schedule no. 1

## Price Schedule 2. Plant, and Mandatory Spares Parts supplied Within Employer's Country

| Item No. | Description                      | <i>Quantity</i> | <i>Unit</i> | Total EXW Price (Excluding Taxes and Duties) |                       | Remarks |
|----------|----------------------------------|-----------------|-------------|--|-----------------------|---------|
|          |                                  |                 |             | <i>Unit Price at<br/>EXW(NPR)</i>            | Total EXW Price (NPR) |         |
| (1)      | (2)                              | (3)             | (4)         | (5)  | (6)=(3)x(5)           | (7)     |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
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|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          | <b>Grand Total of Schedule 2</b> |                 |             |  |                       |         |

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**

**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 8 : Chanauta Substation**

**Price Schedule No 3: Design Services**

| Item | Description  | Qty.                  | Unit Price <sup>#</sup>      |  | Total Price <sup>#</sup> |                                       |
|------|--|-----------------------|------------------------------|--|--------------------------|---------------------------------------|
|      |  |                       | Local<br>Currency<br>Portion | Foreign<br>Currency<br>Portion<br>(optional) | LocalCurrency<br>Portion | Foreign currency<br>Portion(optional) |
| (1)  | (2)  | (3)                   | (4)                          | (5)  | (6)=(4)x(3)              | (7)=(5)x(3)                           |
|      | The scope of the Contract covers the detail design as well. The price of the detail design is deemed to have been covered in the prices of the other schedules | <b>Not Applicable</b> |                              |  |                          |                                       |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 8 : Chanauta Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|------|--|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |      |  |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |      |  |                    |         |
| 1.1      | 132 kV, 30 VA, 5 core current transformer 300-600-900/1A, complete with all accessories   | 3        | Nos  |  |                    |         |
| 1.2      | 33 kV, 30 VA, 3 core current transformer 1200-1600/1A, complete with all accessories  | 3        | Nos. |  |                    |         |
| 1.3      | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 1        | Lot  |  |                    |         |
|          | <b>Sub Total (1)</b>  |          |      |  |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |      |  |                    |         |
| 2.1      | Conductors of suitable size with connector and accessories to complete the scope of Work  | 1        | Lots |  |                    |         |
| 2.2      | 33kV Aluminium Bus suitable for 2500A with connector and accessories to complete the scope of Work  | 1        | Lot  |  |                    |         |
|          | <b>Sub Total (2)</b>  |          |      |  |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |      |  |                    |         |
| 3.1      | Earthing of Transformer, Circuit Breaker and other Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete | 1        | Lots |  |                    |         |
|          | <b>Sub Total (3)</b>  |          |      |  |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |      |  |                    |         |
|          | <b>Grand Total of Schedule 4A</b>   |          |      |  |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 8 : Chanauta Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|------|--------------------------------|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |      |                                |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |      |                                |                    |         |
| 1.1      | 132/33kV, 40/51.5/63 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified  | 1        | Set  |                                |                    |         |
| 1.2      | 132 kV, 30 VA, 5 core current transformer, complete with all accessories  | 3        | Nos  |                                |                    |         |
| 1.3      | 33 kV, 30 VA, 3 core current transformer, complete with all accessories   | 3        | Nos  |                                |                    |         |
| 1.4      | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 1        | Lot  |                                |                    |         |
| 1.5      | Loading, Unloading and Transportation of 63MVA Power Transformer for shifting from Kohalpur to Chanauta   | 1        | Lot  |                                |                    |         |
|          | <b>Sub Total (1)</b>  |          |      |                                |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |      |                                |                    |         |
| 2.1      | Conductors of suitable size with connector and accessories to complete the scope of Work  | 1        | Lots |                                |                    |         |
| 2.2      | 33kV Aluminium Bus suitable for 2500A with connector and accessories to complete the scope of Work  | 1        | Lot  |                                |                    |         |
|          | <b>Sub Total (2)</b>  |          |      |                                |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |      |                                |                    |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (3)</b>  |          |      |                                |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |      |                                |                    |         |
|          | <b>Grand Total of Schedule 4B</b>   |          |      |                                |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 8 : Chanauta Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No.                          | Description   | Quantity | Unit  | Civil Works (Excluding Taxes) |                    | Remarks |
|-----------------------------------|---|----------|-------|-------------------------------|--------------------|---------|
|                                   |   |          |       | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)                               | (2)   | (3)      | (4)   | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>A</b>                          | <b>Civil Works</b>  |          |       |                               |                    |         |
| <b>1</b>                          | <b>Reinforced Cement Concrete Foundation for Steel Structures</b> complete excavation, backfilling, forms, concrete works and reinforcement bars              |          |       |                               |                    |         |
| 1.1                               | Modification of Foundation for Transformer with Rail for the load of 63 MVA Power Transformer   | 30       | Cu.m. |                               |                    |         |
|                                   | <b>Sub Total (1)</b>  |          |       |                               |                    |         |
| <b>2</b>                          | <b>Dismantling Works</b>  |          |       |                               |                    |         |
| 2.1                               | Dismantling and Removal of 132/33 kV 30 MVA Transformer, Bushing, Conservator Tank, Detanking of Oil, Inspection such as to make ready for the Transportation | 1        | Lots  |                               |                    |         |
| 2.2                               | Dismantling & Removal of Existing 132kV & 33kV CT   | 1        | Lots  |                               |                    |         |
| 2.3                               | Dismantling of 33kV Bus bar   | 1        | Lots  |                               |                    |         |
|                                   | <b>Sub Total (2)</b>  |          |       |                               |                    |         |
| <b>Grand Total of Schedule 4C</b> |   |          |       |                               |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

Tender No. GOD/2078/079-06; Package 8 : Chanauta Substation

Price Schedule No. 5. Grand Summary ( Schedule Nos. 1 to 4)

| S.N.                              | Description   | Foreign Currency (USD) | Nepalese Rupees (NRs.) | Remarks |
|-----------------------------------|---|------------------------|------------------------|---------|
| 1                                 | Total Price Schedule No. 1. Plant, and Mandatory Spares Parts supplied from abroad                        |                        |                        |         |
| 2                                 | Total Price Schedule No. 2. Plant, and Mandatory Spares Parts supplied from within the Employer's country |                        |                        |         |
| 3                                 | Total Price Schedule No. 3. Design Services   |                        |                        |         |
| 4                                 | Schedule No. 4. Installation Services   |                        |                        |         |
| Part -A:                          | Local Transportation, Insurance and other Incidental services (including port clearance etc.)             |                        |                        |         |
| Part - B:                         | Installation Charges  |                        |                        |         |
| Part - C:                         | Civil Works   |                        |                        |         |
|                                   | Total of Price Schedule no.4: Installation and Other Services   |                        |                        |         |
| <b>Sub Total of Schedule No 4</b> |   |                        |                        |         |
| <b>Grand Total</b>                |   |                        |                        |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_






**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations  
(Schedules of Rates and Prices)**

### Schedule No.6. Recommended Spare Parts

| Item         | Description | Qty. | Unit Price <sup>#</sup>       |                      | Total Price <sup>#</sup> |
|--------------|-------------|------|-------------------------------|----------------------|--------------------------|
|              |             |      | CIF or CIP<br>(Foreign Parts) | EXW<br>(Local Parts) |                          |
| (1)          | (2)         | (3)  | (4)                           | (5)                  | (6)                      |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
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|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
|              |             |      |                               |                      |                          |
| <b>TOTAL</b> |             |      |                               |                      |                          |

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

# Price Schedules

**Tender No. GOD/2078/079-06; Package 9 : Butwal Substation**

## PREAMBLE

### A. General

|                   |  |
|-------------------|--|
| 1                 | <b>The Price Schedules are divided into separate Schedules as follows:</b>   |
| Schedule No. 1:   | Plant and Mandatory Spare Parts Supplied from Abroad   |
| Schedule No. 2:   | Plant and Mandatory Spare Parts Supplied from within the Employer's Country  |
| Schedule No. 3:   | Design Services (Not Applicable)   |
| Schedule No. 4:   | Installation and Other Services  |
| Schedule No. 5:   | Grand Summary  |
| Schedule No. 6:   | Recommended Spare Parts  |
| 2                 | The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.  |
| 3                 | If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.   |
| <b>B. Pricing</b> |  |
| 4                 | The units and rates in figures entered into the Price Schedules should be type written or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.<br>As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement. |
| 5                 | Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.<br>For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.<br>Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.   |
| 6                 | When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.  |
| 7                 | Bidders are instructed to quote the price schedule no. 1 (Plant, and Mandatory Spares Parts supplied from abroad) either in foreign currency (USD) or Nepalese Rupees (NRs.) and rest price schedule Price Schedule 2 (Plant, and Mandatory Spares Parts supplied Within Employer's Country) and Price Schedule No 4 (Installation Services) entirely in Nepalese Rupees (NRs).  |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 9 : Butwal Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit  | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|-------|----------|--|--------------|---------|
|          |   |                   |          |       |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)   |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |                   |          |       |          |  |              |         |
| <b>1</b> | <b>Main Items</b>   |                   |          |       |          |  |              |         |
| 1.1      | 33/11kV, 24 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified  |                   | 2        | Set   |          |  |              |         |
| 1.2      | 33kV Current Transformer with all accessories, as specified.  |                   | 6        | Nos   |          |  |              |         |
| 1.3      | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 11 kV Side (2 Cable per phase)                               |                   | 2400     | Metre |          |  |              |         |
| 1.4      | 600 V Control Cable and Power cable required to complete the scope of work as specified   |                   | 2        | Lot   |          |  |              |         |
| 1.5      | 11kV Current Transformer with all accessories, as specified   |                   | 6        | Nos   |          |  |              |         |
|          | <b>Sub Total (1)</b>  |                   |          |       |          |  |              |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |                   |          |       |          |  |              |         |
| 2.1      | Conductors of suitable size with connector / accessories to complete the scope of work  |                   | 2        | Lots  |          |  |              |         |
|          | <b>Sub Total (2)</b>  |                   |          |       |          |  |              |         |
| <b>3</b> | <b>Grounding System</b>   |                   |          |       |          |  |              |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. |                   | 2        | Lots  |          |  |              |         |
|          | <b>Sub Total (3)</b>  |                   |          |       |          |  |              |         |
|          | <b>Total of Electrical Part (A)</b>   |                   |          |       |          |  |              |         |
| <b>B</b> | <b>Civil Part</b>   |                   |          |       |          |  |              |         |
| <b>4</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories:  |                   |          |       |          |  |              |         |
| 4.1      | Cable Support Structure for XLPE Cable in Transformer   |                   | 2        | Lots  |          |  |              |         |
|          | <b>Sub Total (4)</b>  |                   |          |       |          |  |              |         |
|          | <b>Total of Civil Part (B)</b>  |                   |          |       |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 9 : Butwal Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>C</b> | <b>Spare Part</b>   |                   |          |      |          |  |              |         |
| <b>5</b> | <b>Spare Parts for 33/11kV, 24MVA Power Transformer</b>     |                   |          |      |          |  |              |         |
| 5.1      | 33kV Phase Bushing, 11kV Bushing & Neutral Bushing (1 each) |                   | 2        | Sets |          |  |              |         |
| 5.2      | Dial Type Thermometer (OTI, WTI 1each)                      |                   | 2        | Sets |          |  |              |         |
| 5.3      | Oil Level Gauge   |                   | 2        | Nos  |          |  |              |         |
| 5.4      | Indicating lamps (100% of used), Lot                        |                   | 2        | Lot  |          |  |              |         |
| 5.5      | All Types of Fuses (100% of used)                           |                   | 2        | Lot  |          |  |              |         |
| 5.6      | Complete Set of Gaskets                                     |                   | 2        | Set  |          |  |              |         |
| 5.7      | Complete set of Pressure Relief Device                      |                   | 2        | Set  |          |  |              |         |
| 5.8      | One BCT of each type  |                   | 2        | Sets |          |  |              |         |
| 5.9      | Cooler Control Contactors                                   |                   | 2        | Nos  |          |  |              |         |
| 5.10     | OLTC Motor Contactor  |                   | 2        | Nos  |          |  |              |         |
| 5.11     | Complete set of Bucholz Relay                               |                   | 2        | Set  |          |  |              |         |
|          | <b>Sub Total of (5)</b>                                     |                   |          |      |          |  |              |         |
|          | <b>Total of Spare Part (C)</b>                              |                   |          |      |          |  |              |         |
|          | <b>Grand Total of Schedule 1</b>                            |                   |          |      |          |  |              |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

|      |  |
|------|--|
| Note | The prices shall be quoted either in the currency of Nepalese Rupees (NRs.) or foreign currency (USD) only as per ITB 19.1 of the BDS. |
|------|--|




**Tender No. GOD/2078/079-06; Package 9 : Butwal Substation**

1. If a Bidder wishes to Supply some item(s) listed in Price Schedule no. 1 from manufacturing plant in Nepal, then such item(s) and price of such item(s) shall be quoted in this Price Schedule no. 2 only. Columns against such item(s) shall be left blank in Price Schedule no. 1.
2. Item No. in the following table shall match those in Price Schedule no. 1

### Price Schedule 2. Plant, and Mandatory Spares Parts supplied Within Employer's Country

| Item No. | Description               | <i>Quantity</i> | <i>Unit</i> | Total EXW Price (Excluding Taxes and Duties) |                       | Remarks |
|----------|---------------------------|-----------------|-------------|--|-----------------------|---------|
|          |                           |                 |             | <i>Unit Price at<br/>EXW(NPR)</i>            | Total EXW Price (NPR) |         |
| (1)      | (2)                       | (3)             | (4)         | (5)  | (6)=(3)x(5)           | (7)     |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          | Grand Total of Schedule 2 |                 |             |  |                       |         |

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**

**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 9 : Butwal Substation**

**Price Schedule No 3: Design Services**

| Item | Description  | Qty.                  | Unit Price <sup>#</sup>      |  | Total Price <sup>#</sup> |                                       |
|------|--|-----------------------|------------------------------|--|--------------------------|---------------------------------------|
|      |  |                       | Local<br>Currency<br>Portion | Foreign<br>Currency<br>Portion<br>(optional) | LocalCurrency<br>Portion | Foreign currency<br>Portion(optional) |
| (1)  | (2)  | (3)                   | (4)                          | (5)  | (6)=(4)x(3)              | (7)=(5)x(3)                           |
|      | The scope of the Contract covers the detail design as well. The price of the detail design is deemed to have been covered in the prices of the other schedules | <b>Not Applicable</b> |                              |  |                          |                                       |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 9 : Butwal Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit  | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|-------|--|--------------------|---------|
|          |   |          |       | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)   | (5)  | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |       |  |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |       |  |                    |         |
| 1.1      | 33/11kV, 24 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified  | 2        | Set   |  |                    |         |
| 1.2      | 33kV Current Transformer with all accessories, as specified.  | 6        | Nos   |  |                    |         |
| 1.3      | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 11 kV Side (2 Cable per phase)                               | 2400     | Metre |  |                    |         |
| 1.4      | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 2        | Lot   |  |                    |         |
| 1.5      | 11kV Current Transformer with all accessories, as specified   | 6        | Nos   |  |                    |         |
|          | <b>Sub Total (1)</b>  |          |       |  |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |       |  |                    |         |
| 2.1      | Conductors of suitable size with connector / accessories to complete the scope of work  | 2        | Lots  |  |                    |         |
|          | <b>Sub Total (2)</b>  |          |       |  |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |       |  |                    |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. | 2        | Lots  |  |                    |         |
|          | <b>Sub Total (3)</b>  |          |       |  |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |       |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 9 : Butwal Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| <b>B</b> | <b>Civil Part</b>  |          |      |  |                    |         |
| <b>4</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories: |          |      |  |                    |         |
| 4.1      | Cable Support Structure for XLPE Cable in Transformer  | 2        | Lots |  |                    |         |
|          | <b>Sub Total (4)</b>   |          |      |  |                    |         |
|          | <b>Total of Civil Part (B)</b>   |          |      |  |                    |         |
| <b>C</b> | <b>Spare Part</b>  |          |      |  |                    |         |
| <b>5</b> | <b>Spare Parts for 33/11kV, 24MVA Power Transformer</b>  |          |      |  |                    |         |
| 5.1      | 33kV Phase Bushing, 11kV Bushing & Neutral Bushing (1 each)  | 2        | Sets |  |                    |         |
| 5.2      | Dial Type Thermometer (OTI, WTI 1each)   | 2        | Sets |  |                    |         |
| 5.3      | Oil Level Gauge  | 2        | Nos  |  |                    |         |
| 5.4      | Indicating lamps (100% of used), Lot   | 2        | Lot  |  |                    |         |
| 5.5      | All Types of Fuses (100% of used)  | 2        | Lot  |  |                    |         |
| 5.6      | Complete Set of Gaskets  | 2        | Set  |  |                    |         |
| 5.7      | Complete set of Pressure Relief Device   | 2        | Set  |  |                    |         |
| 5.8      | One BCT of each type   | 2        | Sets |  |                    |         |
| 5.9      | Cooler Control Contactors  | 2        | Nos  |  |                    |         |
| 5.10     | OLTC Motor Contactor   | 2        | Nos  |  |                    |         |
| 5.11     | Complete set of Bucholz Relay  | 2        | Set  |  |                    |         |
|          | <b>Sub Total of (5)</b>  |          |      |  |                    |         |
|          | <b>Total of Spare Part (C)</b>   |          |      |  |                    |         |
|          | <b>Grand Total of Schedule 4A</b>  |          |      |  |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_






**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 9 : Butwal Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit  | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|-------|--------------------------------|--------------------|---------|
|          |   |          |       | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)   | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |       |                                |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |       |                                |                    |         |
| 1.1      | 33/11kV, 24 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified  | 2        | Set   |                                |                    |         |
| 1.2      | 33kV Current Transformer with all accessories, as specified.  | 6        | Nos   |                                |                    |         |
| 1.3      | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 11 kV Side (2 Cable per phase)                               | 2400     | Metre |                                |                    |         |
| 1.4      | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 2        | Lot   |                                |                    |         |
| 1.5      | 11kV Current Transformer with all accessories, as specified   | 6        | Nos   |                                |                    |         |
|          | <b>Sub Total (1)</b>  |          |       |                                |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |       |                                |                    |         |
| 2.1      | Conductors of suitable size with connector / accessories to complete the scope of work  | 2        | Lots  |                                |                    |         |
|          | <b>Sub Total (2)</b>  |          |       |                                |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |       |                                |                    |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. | 2        | Lots  |                                |                    |         |
|          | <b>Sub Total (3)</b>  |          |       |                                |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |       |                                |                    |         |
|          | <b>Grand Total of Schedule 4B</b>   |          |       |                                |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 9 : Butwal Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No.                          | Description  | Quantity | Unit  | Civil Works (Excluding Taxes) |                    | Remarks |
|-----------------------------------|--|----------|-------|-------------------------------|--------------------|---------|
|                                   |  |          |       | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)                               | (2)  | (3)      | (4)   | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>A</b>                          | <b>Civil Works</b>   |          |       |                               |                    |         |
| 1                                 | <b>Steel Structure &amp; Rail</b>  |          |       |                               |                    |         |
| 1.1                               | Cable Support Structure for XLPE cable in Transformer  | 2        | Lots  |                               |                    |         |
|                                   | <b>Sub Total (1)</b>   |          |       |                               |                    |         |
| 2                                 | <b>Reinforced Cement Concrete Foundation for Steel Structures</b> complete excavation, backfilling, forms, concrete works and reinforcement bars |          |       |                               |                    |         |
| 2.1                               | Modification of Foundation for Transformer with Rail for the load of 2*24MVA Power Transformer   | 32       | Cu.m. |                               |                    |         |
|                                   | <b>Sub Total (2)</b>   |          |       |                               |                    |         |
| 3                                 | <b>Dismantling Works</b>   |          |       |                               |                    |         |
| 3.1                               | Dismantling and Removal of 33/11 kV 16.6 MVA Transformer and its accessories to safe location within Substation compound                         | 2        | Lots  |                               |                    |         |
| 3.2                               | Dismantling & Removal of Existing 33kV C.T   | 2        | Lots  |                               |                    |         |
| 3.3                               | Dismantling & Removal of Existing 11kV C.T   | 2        | Lots  |                               |                    |         |
|                                   | <b>Sub Total (3)</b>   |          |       |                               |                    |         |
| <b>Grand Total of Schedule 4C</b> |  |          |       |                               |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

Tender No. GOD/2078/079-06; Package 9 : Butwal Substation

Price Schedule No. 5. Grand Summary ( Schedule Nos. 1 to 4)

| S.N.                              | Description   | Foreign Currency (USD) | Nepalese Rupees (NRs.) | Remarks |
|-----------------------------------|---|------------------------|------------------------|---------|
| 1                                 | Total Price Schedule No. 1. Plant, and Mandatory Spares Parts supplied from abroad                        |                        |                        |         |
| 2                                 | Total Price Schedule No. 2. Plant, and Mandatory Spares Parts supplied from within the Employer's country |                        |                        |         |
| 3                                 | Total Price Schedule No. 3. Design Services   |                        |                        |         |
| 4                                 | Schedule No. 4. Installation Services   |                        |                        |         |
| Part -A:                          | Local Transportation, Insurance and other Incidental services (including port clearance etc.)             |                        |                        |         |
| Part - B:                         | Installation Charges  |                        |                        |         |
| Part - C:                         | Civil Works   |                        |                        |         |
|                                   | Total of Price Schedule no.4: Installation and Other Services   |                        |                        |         |
| <b>Sub Total of Schedule No 4</b> |   |                        |                        |         |
| <b>Grand Total</b>                |   |                        |                        |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations  
(Schedules of Rates and Prices)**

### Schedule No.6. Recommended Spare Parts

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

# Price Schedules

**Tender No. GOD/2078/079-06; Package 10 : Gandak Substation**

## PREAMBLE

### A. General

|                   |   |
|-------------------|---|
| 1                 | <b>The Price Schedules are divided into separate Schedules as follows:</b>  |
| Schedule No. 1:   | Plant and Mandatory Spare Parts Supplied from Abroad  |
| Schedule No. 2:   | Plant and Mandatory Spare Parts Supplied from within the Employer's Country   |
| Schedule No. 3:   | Design Services (Not Applicable)  |
| Schedule No. 4:   | Installation and Other Services   |
| Schedule No. 5:   | Grand Summary   |
| Schedule No. 6:   | Recommended Spare Parts   |
| 2                 | The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.   |
| 3                 | If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.  |
| <b>B. Pricing</b> |   |
| 4                 | <p>The units and rates in figures entered into the Price Schedules should be type written or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.</p> <p>As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement.</p> |
| 5                 | <p>Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.</p> <p>For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.</p> <p>Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.</p>   |
| 6                 | When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.   |
| 7                 | Bidders are instructed to quote the price schedule no. 1 (Plant, and Mandatory Spares Parts supplied from abroad) either in foreign currency (USD) or Nepalese Rupees (NRs.) and rest price schedule Price Schedule 2 (Plant, and Mandatory Spares Parts supplied Within Employer's Country) and Price Schedule No 4 (Installation Services) entirely in Nepalese Rupees (NRs).   |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 10 : Gandak Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |                   |          |      |          |  |              |         |
| <b>1</b> | <b>Main Items</b>   |                   |          |      |          |  |              |         |
| 1.1      | 132/33kV, 40/51.5/63 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified  |                   | 2        | Set  |          |  |              |         |
| 1.2      | 132 kV, 30 VA, 5 core current transformer 300-600-900/1A, complete with all accessories   |                   | 6        | Nos  |          |  |              |         |
| 1.3      | 33 kV, 30 VA, 3 core current transformer 1200-1600/1A, complete with all accessories  |                   | 6        | Nos. |          |  |              |         |
| 1.4      | 600 V Control Cable and Power cable required to complete the scope of work as specified   |                   | 2        | Lot  |          |  |              |         |
|          | <b>Sub Total (1)</b>  |                   |          |      |          |  |              |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |                   |          |      |          |  |              |         |
| 2.1      | Conductors of suitable size with connector and accessories to complete the scope of Work for 132/33kV Transformer Bay   |                   | 2        | Lots |          |  |              |         |
| 2.2      | Conductors suitable for 2500 A with connector and accessories to complete the scope of Work for 33kV Busbar upgradation   |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (2)</b>  |                   |          |      |          |  |              |         |
| <b>3</b> | <b>Grounding System</b>   |                   |          |      |          |  |              |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. |                   | 2        | Lots |          |  |              |         |
|          | <b>Sub Total (3)</b>  |                   |          |      |          |  |              |         |
|          | <b>Total of Electrical Part (A)</b>   |                   |          |      |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 10 : Gandak Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description  | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>B</b> | <b>Spare Part</b>  |                   |          |      |          |  |              |         |
| 4        | <b>Spare Parts for 132/33kV, 63MVA Power Transformer</b>     |                   |          |      |          |  |              |         |
| 4.1      | 132kV Phase Bushing, 33kV Bushing & Neutral Bushing (1 each) |                   | 1        | Sets |          |  |              |         |
| 4.2      | Dial Type Thermometer (OTI, WTI 1each)                       |                   | 1        | Sets |          |  |              |         |
| 4.3      | Oil Level Gauge  |                   | 1        | Nos  |          |  |              |         |
| 4.4      | Indicating lamps (100% of used), Lot                         |                   | 1        | Lot  |          |  |              |         |
| 4.5      | All Types of Fuses (100% of used)                            |                   | 1        | Lot  |          |  |              |         |
| 4.6      | Complete Set of Gaskets                                      |                   | 1        | Set  |          |  |              |         |
| 4.7      | Complete set of Pressure Relief Device                       |                   | 1        | Set  |          |  |              |         |
| 4.8      | One BCT of each type   |                   | 1        | Sets |          |  |              |         |
| 4.9      | Cooler Control Contactors                                    |                   | 1        | Nos  |          |  |              |         |
| 4.10     | OLTC Motor Contactor   |                   | 1        | Nos  |          |  |              |         |
| 4.11     | Complete set of Bucholz Relay                                |                   | 1        | Set  |          |  |              |         |
|          | <b>Sub Total of (4)</b>                                      |                   |          |      |          |  |              |         |
|          | <b>Total of Spare Part (C)</b>                               |                   |          |      |          |  |              |         |
|          | <b>Grand Total of Schedule 1</b>                             |                   |          |      |          |  |              |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

|      |  |
|------|--|
| Note | The prices shall be quoted either in the currency of Nepalese Rupees (NRs.) or foreign currency (USD) only as per ITB 19.1 of the BDS. |
|------|--|



**Tender No. GOD/2078/079-06; Package 10 : Gandak Substation**

1. If a Bidder wishes to Supply some item(s) listed in Price Schedule no. 1 from manufacturing plant in Nepal, then such item(s) and price of such item(s) shall be quoted in this Price Schedule no. 2 only. Columns against such item(s) shall be left blank in Price Schedule no. 1.
2. Item No. in the following table shall match those in Price Schedule no. 1

### Price Schedule 2. Plant, and Mandatory Spares Parts supplied Within Employer's Country

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_



**Nepal Electricity Authority**  
**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**

**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 10 : Gandak Substation**

**Price Schedule No 3: Design Services**

| Item | Description  | Qty.                  | Unit Price <sup>#</sup>      |  | Total Price <sup>#</sup> |                                       |
|------|--|-----------------------|------------------------------|--|--------------------------|---------------------------------------|
|      |  |                       | Local<br>Currency<br>Portion | Foreign<br>Currency<br>Portion<br>(optional) | LocalCurrency<br>Portion | Foreign currency<br>Portion(optional) |
| (1)  | (2)  | (3)                   | (4)                          | (5)  | (6)=(4)x(3)              | (7)=(5)x(3)                           |
|      | The scope of the Contract covers the detail design as well. The price of the detail design is deemed to have been covered in the prices of the other schedules | <b>Not Applicable</b> |                              |  |                          |                                       |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 10 : Gandak Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|------|--|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |      |  |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |      |  |                    |         |
| 1.1      | 132/33kV, 40/51.5/63 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified  | 2        | Set  |  |                    |         |
| 1.2      | 132 kV, 30 VA, 5 core current transformer 300-600-900/1A, complete with all accessories   | 6        | Nos  |  |                    |         |
| 1.3      | 33 kV, 30 VA, 3 core current transformer 1200-1600/1A, complete with all accessories  | 6        | Nos. |  |                    |         |
| 1.4      | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 2        | Lot  |  |                    |         |
|          | <b>Sub Total (1)</b>  |          |      |  |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |      |  |                    |         |
| 2.1      | Conductors of suitable size with connector and accessories to complete the scope of Work for 132/33kV Transformer Bay   | 2        | Lots |  |                    |         |
| 2.2      | Conductors suitable for 2500 A with connector and accessories to complete the scope of Work for 33kV Busbar upgradation   | 1        | Lots |  |                    |         |
|          | <b>Sub Total (2)</b>  |          |      |  |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |      |  |                    |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. | 2        | Lots |  |                    |         |
|          | <b>Sub Total (3)</b>  |          |      |  |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |      |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 10 : Gandak Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| <b>B</b> | <b>Spare Part</b>  |          |      |  |                    |         |
| 4        | <b>Spare Parts for 132/33kV, 63MVA Power Transformer</b>     |          |      |  |                    |         |
| 4.1      | 132kV Phase Bushing, 33kV Bushing & Neutral Bushing (1 each) | 1        | Sets |  |                    |         |
| 4.2      | Dial Type Thermometer (OTI, WTI 1each)                       | 1        | Sets |  |                    |         |
| 4.3      | Oil Level Gauge  | 1        | Nos  |  |                    |         |
| 4.4      | Indicating lamps (100% of used), Lot                         | 1        | Lot  |  |                    |         |
| 4.5      | All Types of Fuses (100% of used)                            | 1        | Lot  |  |                    |         |
| 4.6      | Complete Set of Gaskets                                      | 1        | Set  |  |                    |         |
| 4.7      | Complete set of Pressure Relief Device                       | 1        | Set  |  |                    |         |
| 4.8      | One BCT of each type   | 1        | Sets |  |                    |         |
| 4.9      | Cooler Control Contactors                                    | 1        | Nos  |  |                    |         |
| 4.10     | OLTC Motor Contactor   | 1        | Nos  |  |                    |         |
| 4.11     | Complete set of Bucholz Relay                                | 1        | Set  |  |                    |         |
|          | <b>Sub Total of (4)</b>                                      |          |      |  |                    |         |
|          | <b>Total of Spare Part (C)</b>                               |          |      |  |                    |         |
|          | <b>Grand Total of Schedule 4A</b>                            |          |      |  |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 10 : Gandak Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|------|--------------------------------|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |      |                                |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |      |                                |                    |         |
| 1.1      | 132/33kV, 40/51.5/63 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified  | 2        | Set  |                                |                    |         |
| 1.2      | 132 kV, 30 VA, 5 core current transformer 300-600-900/1A, complete with all accessorie  | 6        | Nos  |                                |                    |         |
| 1.3      | 33 kV, 30 VA, 3 core current transformer 1200-1600/1A, complete with all accessories  | 6        | Nos. |                                |                    |         |
| 1.4      | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 2        | Lot  |                                |                    |         |
|          | <b>Sub Total (1)</b>  |          |      |                                |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |      |                                |                    |         |
| 2.1      | Conductors of suitable size with connector and accessories to complete the scope of Work for 132/33kV Transformer Bay   | 2        | Lots |                                |                    |         |
| 2.2      | Conductors suitable for 2500 A with connector and accessories to complete the scope of Work for 33kV Busbar upgradation   | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (2)</b>  |          |      |                                |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |      |                                |                    |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. | 2        | Lots |                                |                    |         |
|          | <b>Sub Total (3)</b>  |          |      |                                |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |      |                                |                    |         |
|          | <b>Grand Total of Schedule 4B</b>   |          |      |                                |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 10 : Gandak Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No.                          | Description  | Quantity | Unit  | Civil Works (Excluding Taxes) |                    | Remarks |
|-----------------------------------|--|----------|-------|-------------------------------|--------------------|---------|
|                                   |  |          |       | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)                               | (2)  | (3)      | (4)   | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>A</b>                          | <b>Civil Works</b>   |          |       |                               |                    |         |
| <b>1</b>                          | <b>Reinforced Cement Concrete Foundation for Steel Structures</b> complete excavation, backfilling, forms, concrete works and reinforcement bars |          |       |                               |                    |         |
| 1.1                               | Modification of Foundation for Transformer with Rail for the load of 63 MVA Power Transformer  | 60       | Cu.m. |                               |                    |         |
|                                   | <b>Sub Total (1)</b>   |          |       |                               |                    |         |
| <b>2</b>                          | <b>Dismantling Works</b>   |          |       |                               |                    |         |
| 2.1                               | Dismantling and Removal of 132/33 kV 30 MVA Transformer and its accessories to safe location within Substation compound                          | 2        | Lots  |                               |                    |         |
| 2.2                               | Dismantling & Removal of Existing 132kV & 33kV CT  | 2        | Lots  |                               |                    |         |
| 2.3                               | Dismantling of 33kV Bus bar  | 1        | Lots  |                               |                    |         |
|                                   | <b>Sub Total (2)</b>   |          |       |                               |                    |         |
| <b>Grand Total of Schedule 4C</b> |  |          |       |                               |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

Tender No. GOD/2078/079-06; Package 10 : Gandak Substation

Price Schedule No. 5. Grand Summary ( Schedule Nos. 1 to 4)

| S.N.                              | Description   | Foreign Currency (USD) | Nepalese Rupees (NRs.) | Remarks |
|-----------------------------------|---|------------------------|------------------------|---------|
| 1                                 | Total Price Schedule No. 1. Plant, and Mandatory Spares Parts supplied from abroad                        |                        |                        |         |
| 2                                 | Total Price Schedule No. 2. Plant, and Mandatory Spares Parts supplied from within the Employer's country |                        |                        |         |
| 3                                 | Total Price Schedule No. 3. Design Services   |                        |                        |         |
| 4                                 | Schedule No. 4. Installation Services   |                        |                        |         |
| Part -A:                          | Local Transportation, Insurance and other Incidental services (including port clearance etc.)             |                        |                        |         |
| Part - B:                         | Installation Charges  |                        |                        |         |
| Part - C:                         | Civil Works   |                        |                        |         |
|                                   | Total of Price Schedule no.4: Installation and Other Services   |                        |                        |         |
| <b>Sub Total of Schedule No 4</b> |   |                        |                        |         |
| <b>Grand Total</b>                |   |                        |                        |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations  
(Schedules of Rates and Prices)**

### Schedule No.6. Recommended Spare Parts

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

# Price Schedules

**Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation**

## PREAMBLE

### A. General

|                   |  |
|-------------------|--|
| 1                 | <b>The Price Schedules are divided into separate Schedules as follows:</b>   |
| Schedule No. 1:   | Plant and Mandatory Spare Parts Supplied from Abroad   |
| Schedule No. 2:   | Plant and Mandatory Spare Parts Supplied from within the Employer's Country  |
| Schedule No. 3:   | Design Services (Not Applicable)   |
| Schedule No. 4:   | Installation and Other Services  |
| Schedule No. 5:   | Grand Summary  |
| Schedule No. 6:   | Recommended Spare Parts  |
| 2                 | The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.  |
| 3                 | If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.   |
| <b>B. Pricing</b> |  |
| 4                 | The units and rates in figures entered into the Price Schedules should be type written or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.<br>As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement. |
| 5                 | Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.<br>For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.<br>Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.   |
| 6                 | When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.  |
| 7                 | Bidders are instructed to quote the price schedule no. 1 (Plant, and Mandatory Spares Parts supplied from abroad) either in foreign currency (USD) or Nepalese Rupees (NRs.) and rest price schedule Price Schedule 2 (Plant, and Mandatory Spares Parts supplied Within Employer's Country) and Price Schedule No 4 (Installation Services) entirely in Nepalese Rupees (NRs).  |





**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description  | Country of Origin | Quantity | Unit  | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|-------|----------|--|--------------|---------|
|          |  |                   |          |       |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)   |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>A</b> | <b>Electrical Part</b>   |                   |          |       |          |  |              |         |
| <b>1</b> | <b>Main Items</b>  |                   |          |       |          |  |              |         |
| 1.1      | 132 kV, 30 VA, 5 core current transformer 300-600-900/1A, complete with all accessories  |                   | 3        | Nos   |          |  |              |         |
| 1.2      | 33 kV, 30 VA, 3 core current transformer 1200-1600/1A, complete with all accessories   |                   | 3        | Nos.  |          |  |              |         |
| 1.3      | 600 V Control Cable and Power cable required to complete the scope of work for 132/33kV Transformer Bay as specified                                       |                   | 1        | Lot   |          |  |              |         |
| 1.4      | 33kV, Outdoor Vacuum Circuit Breaker, three Pole type Complete with all accessories and Steel Structure as specified                                       |                   | 1        | Set   |          |  |              |         |
| 1.5      | 33 kV Disconnecting Switch without earth switch complete with all accessories as specified   |                   | 1        | Set   |          |  |              |         |
| 1.6      | 33 kV Disconnecting Switch with earth switch complete with all accessories as specified  |                   | 1        | Set   |          |  |              |         |
| 1.7      | 33kV 300-600/1-1A, 30 VA Current Transformer with all accessories as specified.  |                   | 3        | Nos   |          |  |              |         |
| 1.8      | 33kV Potential Transformer with all accessories as specified   |                   | 3        | Nos   |          |  |              |         |
| 1.9      | 33kV Post Insulator complete as specified  |                   | 3        | Nos   |          |  |              |         |
| 1.10     | Transformer Control & Relay Panel, complete with all accessories as per specification  |                   | 1        | Set   |          |  |              |         |
| 1.11     | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for Incomer (2 Cable per phase) |                   | 600      | Metre |          |  |              |         |
| 1.12     | <b>11 kV Switchgear</b>  |                   |          |       |          |  |              |         |
| 1.12.1   | 11 kV Incomer Panel, 2000 A  |                   | 1        | Set   |          |  |              |         |
| 1.12.2   | 11 kV Outgoing Panel, 1250 A   |                   | 2        | Set   |          |  |              |         |
| 1.12.3   | 11 kV Bus Coupler Panel, 2000 A  |                   | 1        | Set   |          |  |              |         |
| 1.12.4   | 11 kV Trunking Chamber   |                   | 1        | Set   |          |  |              |         |
| 1.13     | 600 V Control Cable and Power cable required to complete the scope of work for 33/11kV Transformer Bays as specified                                       |                   | 1        | Lot   |          |  |              |         |
|          | <b>Sub Total (1)</b>   |                   |          |       |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>2</b> | <b>Miscellaneous Materials</b>  |                   |          |      |          |  |              |         |
| 2.1      | Conductors of suitable size with connector and accessories to complete the scope of Work for 132/33kV Transformer Bay   |                   | 1        | Lots |          |  |              |         |
| 2.2      | 33kV Aluminium Bus suitable for 2500A with connector and accessories to complete the scope of Work including Busbar extension   |                   | 1        | Lots |          |  |              |         |
| 2.3      | Conductors of Suitable size for 33kV with connector and all other accessories for 33/11kV Transformer Bay   |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (2)</b>  |                   |          |      |          |  |              |         |
| <b>3</b> | <b>Grounding System</b>   |                   |          |      |          |  |              |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. |                   | 1        | Lots |          |  |              |         |
| 3.2      | Earthing Mat, Earthing of Equipment, complete for 33/11kV Power Transformer Bay, Lot.   |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (3)</b>  |                   |          |      |          |  |              |         |
| <b>4</b> | <b>Illumination System</b>  |                   |          |      |          |  |              |         |
| 4.1      | Switchyard Lighting for 33/11kV Power Transformer Bay as specified, Lot   |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (4)</b>  |                   |          |      |          |  |              |         |
|          | <b>Total of Electrical Part (A)</b>   |                   |          |      |          |  |              |         |
| <b>B</b> | <b>Civil Part</b>   |                   |          |      |          |  |              |         |
| <b>5</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories:  |                   |          |      |          |  |              |         |
| 5.1      | 33 kV, Disconnecting Switch   |                   | 2        | Lot  |          |  |              |         |
| 5.2      | 33kV Current Transformer  |                   | 3        | Nos  |          |  |              |         |
| 5.3      | 33kV Potential Transformer  |                   | 3        | Nos  |          |  |              |         |
| 5.4      | 33kV Post Insulator   |                   | 3        | Nos  |          |  |              |         |
| 5.5      | Cable Support Structure   |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (5)</b>  |                   |          |      |          |  |              |         |
|          | <b>Total of Civil Part (B)</b>  |                   |          |      |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No.   | Description  | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|------------|--|-------------------|----------|------|----------|--|--------------|---------|
|            |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)        | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>C</b>   | <b>Spare Part</b>  |                   |          |      |          |  |              |         |
| <b>6</b>   | <b>For 33kV Vacuum Circuit Breaker</b>                                 |                   |          |      |          |  |              |         |
| 6.1        | Tripping Coils, Nos  |                   | 3        | Nos  |          |  |              |         |
| 6.2        | Closing Coils, Nos   |                   | 3        | Nos  |          |  |              |         |
| 6.3        | Relays and Contactors (One of each type), Sets                         |                   | 1        | Sets |          |  |              |         |
| 6.4        | Motor for Mechanism, Set   |                   | 1        | Sets |          |  |              |         |
| 6.5        | Interrupter for VCB, No  |                   | 1        | Nos  |          |  |              |         |
|            | <b>Sub Total of (6)</b>  |                   |          |      |          |  |              |         |
| <b>7</b>   | <b>For 33kV Disconnecting Switches</b>                                 |                   |          |      |          |  |              |         |
| 7.1        | Main contact assemblies, Set   |                   | 1        | Sets |          |  |              |         |
| 7.2        | Auxiliary contacts, Set  |                   | 1        | Sets |          |  |              |         |
| 7.3        | Interlocking coil, Set   |                   | 1        | Sets |          |  |              |         |
|            | <b>Sub Total of (7)</b>  |                   |          |      |          |  |              |         |
| <b>8</b>   | <b>For Control and Relay Panel</b>                                     |                   |          |      |          |  |              |         |
| 8.1        | Indicating Lamps(100% of used), Lot                                    |                   | 1        | Lot  |          |  |              |         |
| 8.2        | Fuses of each type(100% of used), Lot                                  |                   | 1        | Lot  |          |  |              |         |
| 8.3        | Color caps for each color for indicating lamps(20% of used), Lot       |                   | 1        | Lot  |          |  |              |         |
| 8.4        | One of each type of Switch, Relay, Timer and other Special Device, Lot |                   | 1        | Lot  |          |  |              |         |
| 8.5        | Each type of Auxiliary Relays(1each), Lot                              |                   | 1        | Lot  |          |  |              |         |
| <b>8.6</b> | <b>Protection Relays</b>   |                   |          |      |          |  |              |         |
| 8.6.1      | 3 Phase over current relays, Set                                       |                   | 1        | Sets |          |  |              |         |
| 8.6.2      | Ground Fault Relays(1each), No.  |                   |          |      |          |  |              |         |
| 8.6.3      | Tripping Control Circuit Relays, No                                    |                   | 1        | Nos  |          |  |              |         |
| 8.7        | Ammeter(1 each), No  |                   | 1        | Nos  |          |  |              |         |
| 8.8        | MVA Meter, No  |                   | 1        | Nos  |          |  |              |         |
| 8.9        | Volt meter (1 Each), No  |                   | 1        | Nos  |          |  |              |         |
|            | <b>Sub Total of (8)</b>  |                   |          |      |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description                                       | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 9        | <b>For 11kV VCB Switchgear Panels</b>             |                   |          |      |          |  |              |         |
| 9.1      | 11kV Vacuum Interrupter for Incomer / Bus Coupler |                   | 1        | Nos. |          |  |              |         |
| 9.2      | 11kV Vacuum Interrupter for Outgoing Feeder       |                   | 1        | Nos. |          |  |              |         |
| 9.3      | Tripping Coils                                    |                   | 3        | Nos. |          |  |              |         |
| 9.4      | Closing Coils                                     |                   | 3        | Nos. |          |  |              |         |
| 9.5      | Spring Charging Motor                             |                   | 1        | Nos. |          |  |              |         |
| 9.6      | <b>Protection Relays</b>                          |                   |          |      |          |  |              |         |
| 9.6.1    | 3 phase Overcurrent Relay                         |                   | 1        | Set  |          |  |              |         |
|          | Ground Fault Relay                                |                   |          |      |          |  |              |         |
| 9.7      | Ammeter   |                   | 1        | Nos  |          |  |              |         |
| 9.8      | Voltmeter   |                   | 1        | Nos  |          |  |              |         |
| 9.9      | kVA Meter   |                   | 1        | Nos  |          |  |              |         |
| 9.10     | 11kV CTs as in Outgoing Feeder                    |                   | 1        | Nos. |          |  |              |         |
| 9.11     | 11kV CTs as in Incomer / Bus Coupler              |                   | 1        | Nos. |          |  |              |         |
| 9.12     | Operating Handle                                  |                   | 1        | Nos  |          |  |              |         |
| 9.13     | Indicating lamps (100% of used)                   |                   | 1        | Lot  |          |  |              |         |
|          | <b>Sub Total of (9)</b>                           |                   |          |      |          |  |              |         |
|          | <b>Total of Spare Part (C)</b>                    |                   |          |      |          |  |              |         |
|          | <b>Grand Total of Schedule 1</b>                  |                   |          |      |          |  |              |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

|      |  |
|------|--|
| Note | The prices shall be quoted either in the currency of Nepalese Rupees (NRs.) or foreign currency (USD) only as per ITB 19.1 of the BDS. |
|------|--|




**Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation**

1. If a Bidder wishes to Supply some item(s) listed in Price Schedule no. 1 from manufacturing plant in Nepal, then such item(s) and price of such item(s) shall be quoted in this Price Schedule no. 2 only. Columns against such item(s) shall be left blank in Price Schedule no. 1.
2. Item No. in the following table shall match those in Price Schedule no. 1

### Price Schedule 2. Plant, and Mandatory Spares Parts supplied Within Employer's Country

| Item No. | Description                      | <i>Quantity</i> | <i>Unit</i> | Total EXW Price (Excluding Taxes and Duties) |                       | Remarks |
|----------|----------------------------------|-----------------|-------------|--|-----------------------|---------|
|          |                                  |                 |             | <i>Unit Price at<br/>EXW(NPR)</i>            | Total EXW Price (NPR) |         |
| (1)      | (2)                              | (3)             | (4)         | (5)  | (6)=(3)x(5)           | (7)     |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          |                                  |                 |             |  |                       |         |
|          | <b>Grand Total of Schedule 2</b> |                 |             |  |                       |         |

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**

**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation**

**Price Schedule No 3: Design Services**

| Item | Description  | Qty.                  | Unit Price <sup>#</sup>      |  | Total Price <sup>#</sup> |                                       |
|------|--|-----------------------|------------------------------|--|--------------------------|---------------------------------------|
|      |  |                       | Local<br>Currency<br>Portion | Foreign<br>Currency<br>Portion<br>(optional) | LocalCurrency<br>Portion | Foreign currency<br>Portion(optional) |
| (1)  | (2)  | (3)                   | (4)                          | (5)  | (6)=(4)x(3)              | (7)=(5)x(3)                           |
|      | The scope of the Contract covers the detail design as well. The price of the detail design is deemed to have been covered in the prices of the other schedules | <b>Not Applicable</b> |                              |  |                          |                                       |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit  | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|-------|--|--------------------|---------|
|          |  |          |       | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)   | (5)  | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>   |          |       |  |                    |         |
| <b>1</b> | <b>Main Items</b>  |          |       |  |                    |         |
| 1.1      | 132 kV, 30 VA, 5 core current transformer 300-600-900/1A, complete with all accessories  | 3        | Nos   |  |                    |         |
| 1.2      | 33 kV, 30 VA, 3 core current transformer 1200-1600/1A, complete with all accessories   | 3        | Nos.  |  |                    |         |
| 1.3      | 600 V Control Cable and Power cable required to complete the scope of work for 132/33kV Transformer Bay as specified                                       | 1        | Lot   |  |                    |         |
| 1.4      | 33kV, Outdoor Vacuum Circuit Breaker, three Pole type Complete with all accessories and Steel Structure as specified                                       | 1        | Set   |  |                    |         |
| 1.5      | 33 kV Disconnecting Switch without earth switch complete with all accessories as specified   | 1        | Set   |  |                    |         |
| 1.6      | 33 kV Disconnecting Switch with earth switch complete with all accessories as specified  | 1        | Set   |  |                    |         |
| 1.7      | 33kV 300-600/1-1A, 30 VA Current Transformer with all accessories as specified.  | 3        | Nos   |  |                    |         |
| 1.8      | 33kV Potential Transformer with all accessories as specified   | 3        | Nos   |  |                    |         |
| 1.9      | 33kV Post Insulator complete as specified  | 3        | Nos   |  |                    |         |
| 1.10     | Transformer Control & Relay Panel, complete with all accessories as per specification  | 1        | Set   |  |                    |         |
| 1.11     | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for Incomer (2 Cable per phase) | 600      | Metre |  |                    |         |
| 1.12     | <b>11 kV Switchgear</b>  |          |       |  |                    |         |
| 1.12.1   | 11 kV Incomer Panel, 2000 A  | 1        | Set   |  |                    |         |
| 1.12.2   | 11 kV Outgoing Panel, 1250 A   | 2        | Set   |  |                    |         |
| 1.12.3   | 11 kV Bus Coupler Panel, 2000 A  | 1        | Set   |  |                    |         |
| 1.12.4   | 11 kV Trunking Chamber   | 1        | Set   |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|------|--|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 1.13     | 600 V Control Cable and Power cable required to complete the scope of work for 33/11kV Transformer Bays as specified  | 1        | Lot  |  |                    |         |
|          | <b>Sub Total (1)</b>  |          |      |  |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |      |  |                    |         |
| 2.1      | Conductors of suitable size with connector and accessories to complete the scope of Work for 132/33kV Transformer Bay   | 1        | Lots |  |                    |         |
| 2.2      | 33kV Aluminium Bus suitable for 2500A with connector and accessories to complete the scope of Work including Busbar extension   | 1        | Lots |  |                    |         |
| 2.3      | Conductors of Suitable size for 33kV with connector and all other accessories for 33/11kV Transformer Bay   | 1        | Lots |  |                    |         |
|          | <b>Sub Total (2)</b>  |          |      |  |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |      |  |                    |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. | 1        | Lots |  |                    |         |
| 3.2      | Earthing Mat, Earthing of Equipment, complete for 33/11kV Power Transformer Bay, Lot.   | 1        | Lots |  |                    |         |
|          | <b>Sub Total (3)</b>  |          |      |  |                    |         |
| <b>4</b> | <b>Illumination System</b>  |          |      |  |                    |         |
| 4.1      | Switchyard Lighting for 33/11kV Power Transformer Bay as specified, Lot   | 1        | Lots |  |                    |         |
|          | <b>Sub Total (4)</b>  |          |      |  |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |      |  |                    |         |
| <b>B</b> | <b>Civil Part</b>   |          |      |  |                    |         |
| <b>5</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories:  |          |      |  |                    |         |
| 5.1      | 33 kV, Disconnecting Switch   | 2        | Lot  |  |                    |         |






# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No.   | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|------------|--|----------|------|--|--------------------|---------|
|            |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)        | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 5.2        | 33kV Current Transformer   | 3        | Nos  |  |                    |         |
| 5.3        | 33kV Potential Transformer   | 3        | Nos  |  |                    |         |
| 5.4        | 33kV Post Insulator  | 3        | Nos  |  |                    |         |
| 5.5        | Cable Support Structure  | 1        | Lots |  |                    |         |
|            | <b>Sub Total (5)</b>   |          |      |  |                    |         |
|            | <b>Total of Civil Part (B)</b>   |          |      |  |                    |         |
| <b>C</b>   | <b>Spare Part</b>  |          |      |  |                    |         |
| <b>6</b>   | <b>For 33kV Vacuum Circuit Breaker</b>                                 |          |      |  |                    |         |
| 6.1        | Tripping Coils, Nos  | 3        | Nos  |  |                    |         |
| 6.2        | Closing Coils, Nos   | 3        | Nos  |  |                    |         |
| 6.3        | Relays and Contactors (One of each type), Sets                         | 1        | Sets |  |                    |         |
| 6.4        | Motor for Mechanism, Set   | 1        | Sets |  |                    |         |
| 6.5        | Interrupter for VCB, No  | 1        | Nos  |  |                    |         |
|            | <b>Sub Total of (6)</b>  |          |      |  |                    |         |
| <b>7</b>   | <b>For 33kV Disconnecting Switches</b>                                 |          |      |  |                    |         |
| 7.1        | Main contact assemblies, Set   | 1        | Sets |  |                    |         |
| 7.2        | Auxiliary contacts, Set  | 1        | Sets |  |                    |         |
| 7.3        | Interlocking coil, Set   | 1        | Sets |  |                    |         |
|            | <b>Sub Total of (7)</b>  |          |      |  |                    |         |
| <b>8</b>   | <b>For Control and Relay Panel</b>                                     |          |      |  |                    |         |
| 8.1        | Indicating Lamps(100% of used), Lot                                    | 1        | Lot  |  |                    |         |
| 8.2        | Fuses of each type(100% of used), Lot                                  | 1        | Lot  |  |                    |         |
| 8.3        | Color caps for each color for indicating lamps(20% of used), Lot       | 1        | Lot  |  |                    |         |
| 8.4        | One of each type of Switch, Relay, Timer and other Special Device, Lot | 1        | Lot  |  |                    |         |
| 8.5        | Each type of Auxiliary Relays(1each), Lot                              | 1        | Lot  |  |                    |         |
| <b>8.6</b> | <b>Protection Relays</b>   |          |      |  |                    |         |
| 8.6.1      | 3 Phase over current relays, Set                                       | 1        | Sets |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description                                       | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|------|--|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 8.6.2    | Ground Fault Relays(1each), No.                   | 1        | Sets |  |                    |         |
| 8.6.3    | Tripping Control Circuit Relays, No               | 1        | Nos  |  |                    |         |
| 8.7      | Ammeter(1 each), No                               | 1        | Nos  |  |                    |         |
| 8.8      | MVA Meter, No                                     | 1        | Nos  |  |                    |         |
| 8.9      | Volt meter (1 Each), No                           | 1        | Nos  |  |                    |         |
|          | <b>Sub Total of (8)</b>                           |          |      |  |                    |         |
| 9        | <b>For 11kV VCB Switchgear Panels</b>             |          |      |  |                    |         |
| 9.1      | 11kV Vacuum Interrupter for Incomer / Bus Coupler | 1        | Nos. |  |                    |         |
| 9.2      | 11kV Vacuum Interrupter for Outgoing Feeder       | 1        | Nos. |  |                    |         |
| 9.3      | Tripping Coils                                    | 3        | Nos. |  |                    |         |
| 9.4      | Closing Coils                                     | 3        | Nos. |  |                    |         |
| 9.5      | Spring Charging Motor                             | 1        | Nos. |  |                    |         |
| 9.6      | <b>Protection Relays</b>                          |          |      |  |                    |         |
| 9.6.1    | 3 phase Overcurrent Relay                         | 1        | Set  |  |                    |         |
|          | Ground Fault Relay                                |          |      |  |                    |         |
| 9.7      | Ammeter   | 1        | Nos  |  |                    |         |
| 9.8      | Voltmeter   | 1        | Nos  |  |                    |         |
| 9.9      | kVA Meter   | 1        | Nos  |  |                    |         |
| 9.10     | 11kV CTs as in Outgoing Feeder                    | 1        | Nos. |  |                    |         |
| 9.11     | 11kV CTs as in Incomer / Bus Coupler              | 1        | Nos. |  |                    |         |
| 9.12     | Operating Handle                                  | 1        | Nos  |  |                    |         |
| 9.13     | Indicating lamps (100% of used)                   | 1        | Lot  |  |                    |         |
|          | <b>Sub Total of (9)</b>                           |          |      |  |                    |         |
|          | <b>Total of Spare Part (C)</b>                    |          |      |  |                    |         |
|          | <b>Grand Total of Schedule 4A</b>                 |          |      |  |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations

#### (Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit  | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|-------|--------------------------------|--------------------|---------|
|          |   |          |       | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)   | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |       |                                |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |       |                                |                    |         |
| 1.1      | 132/33kV, 40/51.5/63 MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV side and Bushing CT Complete with all accessories as specified  | 1        | Set   |                                |                    |         |
| 1.2      | 132 kV, 30 VA, 5 core current transformer 300-600-900/1A, complete with all accessories   | 3        | Nos   |                                |                    |         |
| 1.3      | 33 kV, 30 VA, 3 core current transformer 1200-1600/1A, complete with all accessories  | 3        | Nos.  |                                |                    |         |
| 1.4      | 600 V Control Cable and Power cable required to complete the scope of work for 132/33kV Transformer Bay as specified  | 1        | Lot   |                                |                    |         |
| 1.5      | Loading, Unloading and Transportation of 63MVA Power Transformer for shifting from Kohalpur to Kawasoti   | 1        | Lot   |                                |                    |         |
| 1.6      | 33/11 kV, 10/13.3/16.6 MVA Power transformer with OLTC,RTCC Facility, LA mounted on both side and Bushing CT complete with all accessories as specified. Facility:BCT & LA on both Voltage side | 1        | Lot   |                                |                    |         |
| 1.7      | 33kV, Outdoor Vacuum Circuit Breaker, three Pole type Complete with all accessories and Steel Structure as specified  | 1        | Set   |                                |                    |         |
| 1.8      | 33 kV Disconnecting Switch without earth switch complete with all accessories as specified  | 1        | Set   |                                |                    |         |
| 1.9      | 33 kV Disconnecting Switch with earth switch complete with all accessories as specified   | 1        | Set   |                                |                    |         |
| 1.10     | 33kV 300-600/1-1A, 30 VA Current Transformer with all accessories as specified.   | 3        | Nos   |                                |                    |         |
| 1.11     | 33kV Potential Transformer with all accessories as specified  | 3        | Nos   |                                |                    |         |
| 1.12     | 33kV Post Insulator complete as specified   | 3        | Nos   |                                |                    |         |
| 1.13     | Transformer Control & Relay Panel, complete with all accessories as per specification   | 1        | Set   |                                |                    |         |
| 1.14     | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for Incomer (2 Cable per phase)                                      | 600      | Metre |                                |                    |         |
| 1.15     | <b>11 kV Switchgear</b>   |          |       |                                |                    |         |
| 1.15.1   | 11 kV Incomer Panel, 2000 A   | 1        | Set   |                                |                    |         |
| 1.15.2   | 11 kV Outgoing Panel, 1250 A  | 2        | Set   |                                |                    |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|------|--------------------------------|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)                            | (6)=(3)x(5)        | (7)     |
| 1.15.3   | 11 kV Bus Coupler Panel, 2000 A   | 1        | Set  |                                |                    |         |
| 1.15.4   | 11 kV Trunking Chamber  | 1        | Set  |                                |                    |         |
| 1.16     | 600 V Control Cable and Power cable required to complete the scope of work for 33/11kV Transformer Bays as specified  | 1        | Lot  |                                |                    |         |
| 1.17     | Loading, Unloading and Transportation of 16.6MVA Power Transformer for shifting from Butwal to Kawasoti   | 1        | Lot  |                                |                    |         |
|          | <b>Sub Total (1)</b>  |          |      |                                |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>  |          |      |                                |                    |         |
| 2.1      | Conductors of suitable size with connector and accessories to complete the scope of Work for 132/33kV Transformer Bay   | 1        | Lots |                                |                    |         |
| 2.2      | 33kV Aluminium Bus suitable for 2500A with connector and accessories to complete the scope of Work including Busbar extension   | 1        | Lots |                                |                    |         |
| 2.3      | Conductors of Suitable size for 33kV with connector and all other accessories for 33/11kV Transformer Bay   | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (2)</b>  |          |      |                                |                    |         |
| <b>3</b> | <b>Grounding System</b>   |          |      |                                |                    |         |
| 3.1      | Earthing of Transformer, Equipment with Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete, Lot. | 1        | Lots |                                |                    |         |
| 3.2      | Earthing Mat, Earthing of Equipment, complete for 33/11kV Power Transformer Bay, Lot.   | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (3)</b>  |          |      |                                |                    |         |
| <b>4</b> | <b>Illumination System</b>  |          |      |                                |                    |         |
| 4.1      | Switchyard Lighting for 33/11kV Power Transformer Bay as specified, Lot   | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (4)</b>  |          |      |                                |                    |         |
|          | <b>Total of Electrical Part (A)</b>   |          |      |                                |                    |         |
|          | <b>Grand Total of Schedule 4B</b>   |          |      |                                |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No. | Description  | Quantity | Unit  | Civil Works (Excluding Taxes) |                    | Remarks |
|----------|--|----------|-------|-------------------------------|--------------------|---------|
|          |  |          |       | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)   | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Civil Works</b>   |          |       |                               |                    |         |
| <b>1</b> | <b>Steel Structure &amp; Rail</b>  |          |       |                               |                    |         |
| 1.1      | 33 kV, Disconnecting Switch  | 2        | Lot   |                               |                    |         |
| 1.2      | 33kV Current Transformer   | 3        | Nos   |                               |                    |         |
| 1.3      | 33kV Potential Transformer   | 3        | Nos   |                               |                    |         |
| 1.4      | 33kV Post Insulator  | 3        | Nos   |                               |                    |         |
| 1.5      | Cable Support Structure  | 1        | Lots  |                               |                    |         |
|          | <b>Sub Total (1)</b>   |          |       |                               |                    |         |
| <b>2</b> | <b>Preliminary work</b>  |          |       |                               |                    |         |
| 2.1      | Clearing and Stripping   | 1        | Lot   |                               |                    |         |
| 2.2      | Site Grading, leveling   | 1        | Lot   |                               |                    |         |
| 2.3      | Exploration works including laboratory test, soil test, resistivity test etc, complete.  | 1        | Lot   |                               |                    |         |
| 2.4      | Crushed rock surfacing for switchyard  | 1        | Lot   |                               |                    |         |
|          | <b>Sub Total (2)</b>   |          |       |                               |                    |         |
| <b>3</b> | <b>Reinforced Cement Concrete Foundation for Steel Structures complete excavation, backfilling, forms, concrete works and reinforcement bars</b> |          |       |                               |                    |         |
| 3.1      | Modification of Foundation for Transformer with Rail for the load of 63 MVA Power Transformer  | 30       | Cu.m. |                               |                    |         |
| 3.2      | 33/11kV Transformer with Rail Track, Set   | 24       | Cu.m  |                               |                    |         |
| 3.3      | 33kV, Outdoor Vacuum Circuit Breaker   | 1        | Lot   |                               |                    |         |
| 3.4      | 33 kV, Disconnecting Switch  | 2        | Lot   |                               |                    |         |
| 3.5      | 33kV Current Transformer   | 3        | Nos   |                               |                    |         |
| 3.6      | 33kV Potential Transformer   | 3        | Nos   |                               |                    |         |

**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No.                          | Description   | Quantity | Unit | Civil Works (Excluding Taxes) |                    | Remarks |
|-----------------------------------|---|----------|------|-------------------------------|--------------------|---------|
|                                   |   |          |      | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)                               | (2)   | (3)      | (4)  | (5)                           | (6)=(3)x(5)        | (7)     |
| 3.7                               | 33kV Post Insulator   | 3        | Nos  |                               |                    |         |
| 3.8                               | New Cable Trench, Duct, Conduit (2.5*0.15)  | 50       | m    |                               |                    |         |
|                                   | <b>Sub Total (3)</b>  |          |      |                               |                    |         |
| <b>4</b>                          | <b>Dismantling Works</b>  |          |      |                               |                    |         |
| 4.1                               | Dismantling and Removal of 132/33 kV 30 MVA Transformer and its accessories to safe location within Substation compound | 1        | Lots |                               |                    |         |
| 4.2                               | Dismantling & Removal of Existing 132kV & 33kV CT   | 1        | Lots |                               |                    |         |
| 4.3                               | Dismantling & Removal of Existing 33kV Busbar   | 1        | Lots |                               |                    |         |
|                                   | <b>Sub Total (4)</b>  |          |      |                               |                    |         |
| <b>5</b>                          | <b>Miscellaneous outdoor Facility</b>   |          |      |                               |                    |         |
| 5.1                               | Identification Plates, Danger Notice Etc  | 1        | Lots |                               |                    |         |
|                                   | <b>Sub Total (5)</b>  |          |      |                               |                    |         |
| <b>Grand Total of Schedule 4C</b> |   |          |      |                               |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

Tender No. GOD/2078/079-06; Package 11 : Kawasoti Substation

Price Schedule No. 5. Grand Summary ( Schedule Nos. 1 to 4)

| S.N.                              | Description   | Foreign Currency (USD) | Nepalese Rupees (NRs.) | Remarks |
|-----------------------------------|---|------------------------|------------------------|---------|
| 1                                 | Total Price Schedule No. 1. Plant, and Mandatory Spares Parts supplied from abroad                        |                        |                        |         |
| 2                                 | Total Price Schedule No. 2. Plant, and Mandatory Spares Parts supplied from within the Employer's country |                        |                        |         |
| 3                                 | Total Price Schedule No. 3. Design Services   |                        |                        |         |
| 4                                 | Schedule No. 4. Installation Services   |                        |                        |         |
| Part -A:                          | Local Transportation, Insurance and other Incidental services (including port clearance etc.)             |                        |                        |         |
| Part - B:                         | Installation Charges  |                        |                        |         |
| Part - C:                         | Civil Works   |                        |                        |         |
|                                   | Total of Price Schedule no.4: Installation and Other Services   |                        |                        |         |
| <b>Sub Total of Schedule No 4</b> |   |                        |                        |         |
| <b>Grand Total</b>                |   |                        |                        |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations  
(Schedules of Rates and Prices)**

### Schedule No.6. Recommended Spare Parts

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_



# Price Schedules

**Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation**

## PREAMBLE

### A. General

|                   |  |
|-------------------|--|
| 1                 | <b>The Price Schedules are divided into separate Schedules as follows:</b>   |
| Schedule No. 1:   | Plant and Mandatory Spare Parts Supplied from Abroad   |
| Schedule No. 2:   | Plant and Mandatory Spare Parts Supplied from within the Employer's Country  |
| Schedule No. 3:   | Design Services (Not Applicable)   |
| Schedule No. 4:   | Installation and Other Services  |
| Schedule No. 5:   | Grand Summary  |
| Schedule No. 6:   | Recommended Spare Parts  |
| 2                 | The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.  |
| 3                 | If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.   |
| <b>B. Pricing</b> |  |
| 4                 | The units and rates in figures entered into the Price Schedules should be type written or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.<br>As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement. |
| 5                 | Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.<br>For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.<br>Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.   |
| 6                 | When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.  |
| 7                 | Bidders are instructed to quote the price schedule no. 1 (Plant, and Mandatory Spares Parts supplied from abroad) either in foreign currency (USD) or Nepalese Rupees (NRs.) and rest price schedule Price Schedule 2 (Plant, and Mandatory Spares Parts supplied Within Employer's Country) and Price Schedule No 4 (Installation Services) entirely in Nepalese Rupees (NRs).  |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit  | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|-------|----------|--|--------------|---------|
|          |   |                   |          |       |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)   |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |                   |          |       |          |  |              |         |
| <b>1</b> | <b>Main Items</b>   |                   |          |       |          |  |              |         |
| 1.1      | 132kV, 1250 A Outdoor SF6 Circuit Breaker,three Pole type Complete with all accesories and Steel Structure  |                   | 1        | Set   |          |  |              |         |
| 1.2      | 132kV, 1250 A Disconnecting Switch without earthing switch complete with all accessories, as specified  |                   | 2        | Set   |          |  |              |         |
| 1.3      | 132kV (300-600-900/1), 5 core 30 VA Current Transformer with all accessories, as specified.   |                   | 3        | Nos   |          |  |              |         |
| 1.4      | 132kV Transformer Control & Relay Panel, complete with all accessories as per specification(as per existing type)   |                   | 1        | Set   |          |  |              |         |
| 1.5      | 132kV Post Insulator  |                   | 9        | Nos   |          |  |              |         |
| 1.6      | 132 kV Lightning Arrestor with all accessories as specified   |                   | 3        | Nos   |          |  |              |         |
| 1.7      | 33kV Line Control & Relay Panel, complete with all accessories as per specification(as per existing type)   |                   | 3        | Set   |          |  |              |         |
| 1.8      | 33 kV, 2000 A Outdoor VCB, three Pole type Complete with all accessories and steel structure as specified   |                   | 4        | Set   |          |  |              |         |
| 1.9      | 33kV 2000 A Disconnecting Switch without Earthing Switch complete with all accessories as specified   |                   | 6        | Set   |          |  |              |         |
| 1.10     | 33kV 2000 A Disconnecting Switch with Earthing Switch complete with all accessories as specified  |                   | 3        | Set   |          |  |              |         |
| 1.11     | 33kV(300-600-1200/1) 3 Core 30 VA Current Transformer as specified  |                   | 12       | Nos.  |          |  |              |         |
| 1.12     | 33 kV Lightning Arrestor with all accessories as specified  |                   | 9        | Nos   |          |  |              |         |
| 1.13     | 33 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 33 kV Side (from 33kV Incomer Bay to 132/33kV Power Transformer) |                   | 1200     | Metre |          |  |              |         |
| 1.14     | 33kV Post Insulator complete as specified   |                   | 15       | Nos.  |          |  |              |         |
| 1.15     | Adaption work for Bus Bar Protection  |                   | 1        | Lot   |          |  |              |         |
| 1.16     | 600 V Control Cable and Power cable required to complete the scope of work as specified   |                   | 1        | Lot   |          |  |              |         |
|          | <b>Sub Total (1)</b>  |                   |          |       |          |  |              |         |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description  | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>2</b> | <b>Miscellaneous Materials</b>   |                   |          |      |          |  |              |         |
| 2.1      | 132 kV & 33 kV Insulator strings with clamps to complete the specified scope of works  |                   | 1        | Lot  |          |  |              |         |
| 2.2      | ACSR conductors for connecting with all accessories for 132kV & 33 kV Extension  |                   | 1        | Lot  |          |  |              |         |
| 2.3      | Aluminium Bus of suitable dimensions for extension of 132kV existing Main Bus with Clamp and Connector for Bus & Line Bay and all accessories as used in the Substation as per specification                                   |                   | 90       | m    |          |  |              |         |
| 2.4      | Aluminium Pipe for 132kV Bus of suitable dimensions for interconnection of equipments and Bus Support as used in the Substation as per specification   |                   | 1        | Lot  |          |  |              |         |
| 2.5      | Tubular bus for 33 kV Bus including all other accessories and hardwares required to complete the specified scope of work:  |                   | 1        | Lot  |          |  |              |         |
|          | <b>Sub Total (2)</b>   |                   |          |      |          |  |              |         |
| <b>3</b> | <b>Grounding System</b>  |                   |          |      |          |  |              |         |
| 3.1      | Earthing of Transformer, Circuit Breaker, and other Equipment with Earthing Mat, Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete |                   | 1        | Lots |          |  |              |         |
| 3.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories to complete the specified scope of works  |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (3)</b>   |                   |          |      |          |  |              |         |
| <b>4</b> | <b>Air conditioning &amp; Illumination system</b>  |                   |          |      |          |  |              |         |
| 4.1      | High wall type split AC unit of 2 TR capacities for control room   |                   | 6        | Nos  |          |  |              |         |
| 4.2      | Switchyard Lighting as specified, Lot  |                   | 1        | Lot  |          |  |              |         |
|          | <b>Sub Total (4)</b>   |                   |          |      |          |  |              |         |
|          | <b>Total of Electrical Part (A)</b>  |                   |          |      |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description   | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|---|-------------------|----------|------|----------|--|--------------|---------|
|          |   |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)   |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>B</b> | <b>Civil Part</b>   |                   |          |      |          |  |              |         |
| <b>5</b> | Steel structure<br>for post, beam and equipment supporting frame complete with bolts, nuts and all accessories: |                   |          |      |          |  |              |         |
| 5.1      | 132kV Disconnecting Switch  |                   | 2        | Lot  |          |  |              |         |
| 5.2      | 132kV Current Transformer   |                   | 3        | Lot  |          |  |              |         |
| 5.3      | 132kV Post Insulator  |                   | 9        | Lot  |          |  |              |         |
| 5.4      | 132kV Lightning Arrestor  |                   | 3        | Lot  |          |  |              |         |
| 5.5      | 33kV Disconnecting Switch with Earth Switch   |                   | 3        | Lot  |          |  |              |         |
| 5.6      | 33kV Disconnecting Switch without Earth Switch  |                   | 6        | Lot  |          |  |              |         |
| 5.7      | 33kV Current transformer  |                   | 15       | Lot  |          |  |              |         |
| 5.8      | 33kV Lightning Arrestor   |                   | 9        | Lot  |          |  |              |         |
| 5.9      | 33kV Post Insulator   |                   | 15       | Lot  |          |  |              |         |
| 5.10     | 132 kV Gantry (4 Gantry + 2 Girder )  |                   | 1        | Lot  |          |  |              |         |
|          | <b>Sub Total (5)</b>  |                   |          |      |          |  |              |         |
|          | <b>Total of Civil Part (B)</b>  |                   |          |      |          |  |              |         |
| <b>C</b> | <b>Spare Part</b>   |                   |          |      |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description  | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 6        | <b>For 132kV SF6 Circuit Breaker</b>                                   |                   |          |      |          |  |              |         |
| 6.1      | Tripping Coils   |                   | 3        | Nos. |          |  |              |         |
| 6.2      | Closing Coils,   |                   | 3        | Nos. |          |  |              |         |
| 6.3      | Pressure Switches, Relays and Contactors (One of each type),           |                   | 1        | Set  |          |  |              |         |
| 6.4      | Motor for Mechanism  |                   | 2        | Nos. |          |  |              |         |
| 6.5      | Complete Sets of O-rings and Gaskets                                   |                   | 1        | Lot  |          |  |              |         |
| 6.6      | SF6 Gas filling Nozzle & Adaptor                                       |                   | 1        | Nos. |          |  |              |         |
|          | <b>Sub Total of (6)</b>  |                   |          |      |          |  |              |         |
| 7        | <b>For 132kV Disconnecting Switches</b>                                |                   |          |      |          |  |              |         |
| 7.1      | Main contact assemblies, Set   |                   | 1        | Sets |          |  |              |         |
| 7.2      | Auxiliary contacts, Set  |                   | 1        | Sets |          |  |              |         |
| 7.3      | Interlocking coil, Set   |                   | 1        | Sets |          |  |              |         |
|          | <b>Sub Total of (7)</b>  |                   |          |      |          |  |              |         |
| 8        | <b>For Control and Relay Panel</b>                                     |                   |          |      |          |  |              |         |
| 8.1      | Indicating Lamps(100% of used), Lot                                    |                   | 1        | Lot  |          |  |              |         |
| 8.2      | Fuses of each type(100% of used), Lot                                  |                   | 1        | Lot  |          |  |              |         |
| 8.3      | Color caps for each color for indicating lamps(20% of used), Lot       |                   | 1        | Lot  |          |  |              |         |
| 8.4      | One of each type of Switch, Relay, Timer and other Special Device, Lot |                   | 1        | Lot  |          |  |              |         |
| 8.5      | Each type of Auxiliary Relays(1each), Lot                              |                   | 1        | Lot  |          |  |              |         |
| 8.6      | <b>Protection Relays</b>   |                   |          |      |          |  |              |         |
| 8.6.1    | 3 Phase over current relays, Set                                       |                   | 3        | Nos  |          |  |              |         |
| 8.6.2    | Ground Fault Relays(1each), No.  |                   |          |      |          |  |              |         |
| 8.6.3    | Tripping Control Circuit Relays, No                                    |                   | 1        | Nos  |          |  |              |         |
| 8.7      | Ammeter(1 each), No  |                   | 1        | Nos  |          |  |              |         |
| 8.8      | MVA Meter, No  |                   | 1        | Nos  |          |  |              |         |
| 8.9      | Volt meter (1 Each), No  |                   | 1        | Nos  |          |  |              |         |
|          | <b>Sub Total of (8)</b>  |                   |          |      |          |  |              |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description                                    | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 9        | <b>For 33kV Vacuum Circuit Breaker</b>         |                   |          |      |          |  |              |         |
| 9.1      | Tripping Coils, Nos                            |                   | 3        | Nos  |          |  |              |         |
| 9.2      | Closing Coils, Nos                             |                   | 3        | Nos  |          |  |              |         |
| 9.3      | Relays and Contactors (One of each type), Sets |                   | 1        | Sets |          |  |              |         |
| 9.4      | Motor for Mechanism, Set                       |                   | 2        | Sets |          |  |              |         |
| 9.5      | Interrupter for VCB, No                        |                   | 3        | Nos  |          |  |              |         |
|          | <b>Sub Total of (9)</b>                        |                   |          |      |          |  |              |         |
| 10       | <b>For 33kV Disconnecting Switches</b>         |                   |          |      |          |  |              |         |
| 10.1     | Main contact assemblies, Set                   |                   | 1        | Sets |          |  |              |         |
| 10.2     | Auxiliary contacts, Set                        |                   | 1        | Sets |          |  |              |         |
| 10.3     | Interlocking coil, Set                         |                   | 1        | Sets |          |  |              |         |
|          | <b>Sub Total of (10)</b>                       |                   |          |      |          |  |              |         |
|          | <b>Total of Spare Part (C)</b>                 |                   |          |      |          |  |              |         |
|          | <b>Grand Total of Schedule 1</b>               |                   |          |      |          |  |              |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

|      |  |
|------|--|
| Note | The prices shall be quoted either in the currency of Nepalese Rupees (NRs.) or foreign currency (USD) only as per ITB 19.1 of the BDS. |
|------|--|




**Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation**

1. If a Bidder wishes to Supply some item(s) listed in Price Schedule no. 1 from manufacturing plant in Nepal, then such item(s) and price of such item(s) shall be quoted in this Price Schedule no. 2 only. Columns against such item(s) shall be left blank in Price Schedule no. 1.
2. Item No. in the following table shall match those in Price Schedule no. 1

### Price Schedule 2. Plant, and Mandatory Spares Parts supplied Within Employer's Country

| Item No. | Description               | <i>Quantity</i> | <i>Unit</i> | Total EXW Price (Excluding Taxes and Duties) |                       | Remarks |
|----------|---------------------------|-----------------|-------------|--|-----------------------|---------|
|          |                           |                 |             | <i>Unit Price at EXW(NPR)</i>                | Total EXW Price (NPR) |         |
| (1)      | (2)                       | (3)             | (4)         | (5)  | (6)=(3)x(5)           | (7)     |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          |                           |                 |             |  |                       |         |
|          | Grand Total of Schedule 2 |                 |             |  |                       |         |

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**

**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation**

**Price Schedule No 3: Design Services**

| Item | Description  | Qty.                  | Unit Price <sup>#</sup>      |  | Total Price <sup>#</sup> |                                       |
|------|--|-----------------------|------------------------------|--|--------------------------|---------------------------------------|
|      |  |                       | Local<br>Currency<br>Portion | Foreign<br>Currency<br>Portion<br>(optional) | LocalCurrency<br>Portion | Foreign currency<br>Portion(optional) |
| (1)  | (2)  | (3)                   | (4)                          | (5)  | (6)=(4)x(3)              | (7)=(5)x(3)                           |
|      | The scope of the Contract covers the detail design as well. The price of the detail design is deemed to have been covered in the prices of the other schedules | <b>Not Applicable</b> |                              |  |                          |                                       |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description   | Quantity | Unit  | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|---|----------|-------|--|--------------------|---------|
|          |   |          |       | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)   | (5)  | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |       |  |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |       |  |                    |         |
| 1.1      | 132kV, 1250 A Outdoor SF6 Circuit Breaker,three Pole type Complete with all accessories and Steel Structure   | 1        | Set   |  |                    |         |
| 1.2      | 132kV, 1250 A Disconnecting Switch without earthing switch complete with all accessories, as specified  | 2        | Set   |  |                    |         |
| 1.3      | 132kV (300-600-900/1), 5 core 30 VA Current Transformer with all accessories, as specified.   | 3        | Nos   |  |                    |         |
| 1.4      | 132kV Transformer Control & Relay Panel, complete with all accessories as per specification(as per existing type)   | 1        | Set   |  |                    |         |
| 1.5      | 132kV Post Insulator  | 9        | Nos   |  |                    |         |
| 1.6      | 132 kV Lightning Arrestor with all accessories as specified   | 3        | Nos   |  |                    |         |
| 1.7      | 33kV Line Control & Relay Panel, complete with all accessories as per specification(as per existing type)   | 3        | Set   |  |                    |         |
| 1.8      | 33 kV, 2000 A Outdoor VCB, three Pole type Complete with all accessories and steel structure as specified   | 4        | Set   |  |                    |         |
| 1.9      | 33kV 2000 A Disconnecting Switch without Earthing Switch complete with all accessories as specified   | 6        | Set   |  |                    |         |
| 1.10     | 33kV 2000 A Disconnecting Switch with Earthing Switch complete with all accessories as specified  | 3        | Set   |  |                    |         |
| 1.11     | 33kV(300-600-1200/1) 3 Core 30 VA Current Transformer as specified  | 12       | Nos.  |  |                    |         |
| 1.12     | 33 kV Lightning Arrestor with all accessories as specified  | 9        | Nos   |  |                    |         |
| 1.13     | 33 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 33 kV Side (from 33kV Incomer Bay to 132/33kV Power Transformer) | 1200     | Metre |  |                    |         |
| 1.14     | 33kV Post Insulator complete as specified   | 15       | Nos.  |  |                    |         |
| 1.15     | Adaption work for Bus Bar Protection  | 1        | Lot   |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation

#### Price Schedule No 4. Installation Services

##### Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 1.16     | 600 V Control Cable and Power cable required to complete the scope of work as specified  | 1        | Lot  |  |                    |         |
|          | <b>Sub Total (1)</b>   |          |      |  |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>   |          |      |  |                    |         |
| 2.1      | 132 kV & 33 kV Insulator strings with clamps to complete the specified scope of works  | 1        | Lot  |  |                    |         |
| 2.2      | ACSR conductors for connecting with all accessories for 132kV & 33 kV Extension  | 1        | Lot  |  |                    |         |
| 2.3      | Aluminium Bus of suitable dimensions for extension of 132kV existing Main Bus with Clamp and Connector for Bus & Line Bay and all accessories as used in the Substation as per specification                                   | 90       | m    |  |                    |         |
| 2.4      | Aluminium Pipe for 132kV Bus of suitable dimensions for interconnection of equipments and Bus Support as used in the Substation as per specification   | 1        | Lot  |  |                    |         |
| 2.5      | Tubular bus for 33 kV Bus including all other accessories and hardwares required to complete the specified scope of work:  | 1        | Lot  |  |                    |         |
|          | <b>Sub Total (2)</b>   |          |      |  |                    |         |
| <b>3</b> | <b>Grounding System</b>  |          |      |  |                    |         |
| 3.1      | Earthing of Transformer, Circuit Breaker, and other Equipment with Earthing Mat, Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete | 1        | Lots |  |                    |         |
| 3.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories to complete the specified scope of works  | 1        | Lots |  |                    |         |
|          | <b>Sub Total (3)</b>   |          |      |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| <b>4</b> | <b>Air conditioning &amp; Illumination system</b>  |          |      |  |                    |         |
| 4.1      | High wall type split AC unit of 2 TR capacities for control room   | 6        | Nos  |  |                    |         |
| 4.2      | Switchyard Lighting as specified, Lot  | 1        | Lot  |  |                    |         |
|          | <b>Sub Total (4)</b>   |          |      |  |                    |         |
|          | <b>Total of Electrical Part (A)</b>  |          |      |  |                    |         |
| <b>B</b> | <b>Civil Part</b>  |          |      |  |                    |         |
| <b>5</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories: |          |      |  |                    |         |
| 5.1      | 132kV Disconnecting Switch   | 2        | Lot  |  |                    |         |
| 5.2      | 132kV Current Transformer  | 3        | Lot  |  |                    |         |
| 5.3      | 132kV Post Insulator   | 9        | Lot  |  |                    |         |
| 5.4      | 132kV Lightning Arrestor   | 3        | Lot  |  |                    |         |
| 5.5      | 33kV Disconnecting Switch with Earth Switch  | 3        | Lot  |  |                    |         |
| 5.6      | 33kV Disconnecting Switch without Earth Switch   | 6        | Lot  |  |                    |         |
| 5.7      | 33kV Current transformer   | 15       | Lot  |  |                    |         |
| 5.8      | 33kV Lightning Arrestor  | 9        | Lot  |  |                    |         |
| 5.9      | 33kV Post Insulator  | 15       | Lot  |  |                    |         |
| 5.10     | 132 kV Gantry (4 Gantry + 2 Girder )   | 1        | Lot  |  |                    |         |
|          | <b>Sub Total (5)</b>   |          |      |  |                    |         |
|          | <b>Total of Civil Part (B)</b>   |          |      |  |                    |         |
| <b>C</b> | <b>Spare Part</b>  |          |      |  |                    |         |
| <b>6</b> | <b>For 132kV SF6 Circuit Breaker</b>   |          |      |  |                    |         |
| 6.1      | Tripping Coils   | 3        | Nos. |  |                    |         |
| 6.2      | Closing Coils,   | 3        | Nos. |  |                    |         |
| 6.3      | Pressure Switches, Relays and Contactors (One of each type),   | 1        | Set  |  |                    |         |
| 6.4      | Motor for Mechanism  | 2        | Nos. |  |                    |         |
| 6.5      | Complete Sets of O-rings and Gaskets   | 1        | Lot  |  |                    |         |



# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations

#### (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 6.6      | SF6 Gas filling Nozzle & Adaptor                                       | 1        | Nos. |  |                    |         |
|          | <b>Sub Total of (6)</b>  |          |      |  |                    |         |
| 7        | <b>For 132kV Disconnecting Switches</b>                                |          |      |  |                    |         |
| 7.1      | Main contact assemblies, Set   | 1        | Sets |  |                    |         |
| 7.2      | Auxiliary contacts, Set  | 1        | Sets |  |                    |         |
| 7.3      | Interlocking coil, Set   | 1        | Sets |  |                    |         |
|          | <b>Sub Total of (7)</b>  |          |      |  |                    |         |
| 8        | <b>For Control and Relay Panel</b>                                     |          |      |  |                    |         |
| 8.1      | Indicating Lamps(100% of used), Lot                                    | 1        | Lot  |  |                    |         |
| 8.2      | Fuses of each type(100% of used), Lot                                  | 1        | Lot  |  |                    |         |
| 8.3      | Color caps for each color for indicating lamps(20% of used), Lot       | 1        | Lot  |  |                    |         |
| 8.4      | One of each type of Switch, Relay, Timer and other Special Device, Lot | 1        | Lot  |  |                    |         |
| 8.5      | Each type of Auxiliary Relays(1each), Lot                              | 1        | Lot  |  |                    |         |



# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description                                    | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 8.6      | <b>Protection Relays</b>                       |          |      |  |                    |         |
| 8.6.1    | 3 Phase over current relays, Set               | 3        | Nos  |  |                    |         |
| 8.6.2    | Ground Fault Relays(1each), No.                |          |      |  |                    |         |
| 8.6.3    | Tripping Control Circuit Relays, No            | 1        | Nos  |  |                    |         |
| 8.7      | Ammeter(1 each), No                            | 1        | Nos  |  |                    |         |
| 8.8      | MVA Meter, No                                  | 1        | Nos  |  |                    |         |
| 8.9      | Volt meter (1 Each), No                        | 1        | Nos  |  |                    |         |
|          | <b>Sub Total of (8)</b>                        |          |      |  |                    |         |
| 9        | <b>For 33kV Vacuum Circuit Breaker</b>         |          |      |  |                    |         |
| 9.1      | Tripping Coils, Nos                            | 3        | Nos  |  |                    |         |
| 9.2      | Closing Coils, Nos                             | 3        | Nos  |  |                    |         |
| 9.3      | Relays and Contactors (One of each type), Sets | 1        | Sets |  |                    |         |
| 9.4      | Motor for Mechanism, Set                       | 2        | Sets |  |                    |         |
| 9.5      | Interrupter for VCB, No                        | 3        | Nos  |  |                    |         |
|          | <b>Sub Total of (9)</b>                        |          |      |  |                    |         |
| 10       | <b>For 33kV Disconnecting Switches</b>         |          |      |  |                    |         |
| 10.1     | Main contact assemblies, Set                   | 1        | Sets |  |                    |         |
| 10.2     | Auxiliary contacts, Set                        | 1        | Sets |  |                    |         |
| 10.3     | Interlocking coil, Set                         | 1        | Sets |  |                    |         |
|          | <b>Sub Total of (10)</b>                       |          |      |  |                    |         |
|          | <b>Total of Spare Part (C)</b>                 |          |      |  |                    |         |
|          | <b>Grand Total of Schedule 4A</b>              |          |      |  |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations

#### (Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description   | Quantity | Unit  | Installation (Excluding Taxes) |                    | Remarks |
|----------|---|----------|-------|--------------------------------|--------------------|---------|
|          |   |          |       | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)   | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>  |          |       |                                |                    |         |
| <b>1</b> | <b>Main Items</b>   |          |       |                                |                    |         |
| 1.1      | 132/33kV, 63 MVA, Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified  | 2        | Set   |                                |                    |         |
| 1.2      | 132kV, 1250 A Outdoor SF6 Circuit Breaker,three Pole type Complete with all accesories and Steel Structure  | 1        | Set   |                                |                    |         |
| 1.3      | 132kV, 1250 A Disconnecting Switch without earthing switch complete with all accessories, as specified  | 2        | Set   |                                |                    |         |
| 1.4      | 132kV (300-600-900/1), 5 core 30 VA Current Transformer with all accessories, as specified.   | 3        | Nos   |                                |                    |         |
| 1.5      | 132kV Transformer Control & Relay Panel, complete with all accessories as per specification(as per existing type)   | 1        | Set   |                                |                    |         |
| 1.6      | 132kV Post Insulator  | 9        | Nos   |                                |                    |         |
| 1.7      | 132 kV Lightning Arrestor with all accessories as specified   | 3        | Nos   |                                |                    |         |
| 1.8      | 33kV Line Control & Relay Panel, complete with all accessories as per specification(as per existing type)   | 3        | Set   |                                |                    |         |
| 1.9      | 33 kV, 2000 A Outdoor VCB, three Pole type Complete with all accessories and steel structure as specified   | 4        | Set   |                                |                    |         |
| 1.10     | 33kV 2000 A Disconnecting Switch without Earthing Switch complete with all accessories as specified   | 6        | Set   |                                |                    |         |
| 1.11     | 33kV 2000 A Disconnecting Switch with Earthing Switch complete with all accessories as specified  | 3        | Set   |                                |                    |         |
| 1.12     | 33kV(300-600-1200/1) 3 Core 30 VA Current Transformer as specified  | 12       | Nos.  |                                |                    |         |
| 1.13     | 33 kV Lightning Arrestor with all accessories as specified  | 9        | Nos   |                                |                    |         |
| 1.14     | 33 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for 33 kV Side (from 33kV Incomer Bay to 132/33kV Power Transformer) | 1200     | Metre |                                |                    |         |
| 1.15     | 33kV Post Insulator complete as specified   | 15       | Nos.  |                                |                    |         |
| 1.16     | Adaption work for Bus Bar Protection  | 1        | Lot   |                                |                    |         |
| 1.17     | 600 V Control Cable and Power cable required to complete the scope of work as specified   | 1        | Lot   |                                |                    |         |
|          | <b>Sub Total (1)</b>  |          |       |                                |                    |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description  | Quantity | Unit | Installation (Excluding Taxes) |                    | Remarks |
|----------|--|----------|------|--------------------------------|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>2</b> | <b>Miscellaneous Materials</b>   |          |      |                                |                    |         |
| 2.1      | 132 kV & 33 kV Insulator strings with clamps to complete the specified scope of works  | 1        | Lot  |                                |                    |         |
| 2.2      | ACSR conductors for connecting with all accessories for 132kV & 33 kV Extension  | 1        | Lot  |                                |                    |         |
| 2.3      | Aluminium Bus of suitable dimensions for extension of 132kV existing Main Bus with Clamp and Connector for Bus & Line Bay and all accessories as used in the Substation as per specification                                   | 90       | m    |                                |                    |         |
| 2.4      | Aluminium Pipe for 132kV Bus of suitable dimensions for interconnection of equipments and Bus Support as used in the Substation as per specification   | 1        | Lot  |                                |                    |         |
| 2.5      | Tubular bus for 33 kV Bus including all other accessories and hardwares required to complete the specified scope of work:  | 1        | Lot  |                                |                    |         |
|          | <b>Sub Total (2)</b>   |          |      |                                |                    |         |
| <b>3</b> | <b>Grounding System</b>  |          |      |                                |                    |         |
| 3.1      | Earthing of Transformer, Circuit Breaker, and other Equipment with Earthing Mat, Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete | 1        | Lots |                                |                    |         |
| 3.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories to complete the specified scope of works  | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (3)</b>   |          |      |                                |                    |         |
| <b>4</b> | <b>Air conditioning &amp; Illumination system</b>  |          |      |                                |                    |         |
| 4.1      | High wall type split AC unit of 2 TR capacities for control room   | 6        | Nos  |                                |                    |         |
| 4.2      | Switchyard Lighting as specified, Lot  | 1        | Lot  |                                |                    |         |
|          | <b>Sub Total (4)</b>   |          |      |                                |                    |         |
|          | <b>Total of Electrical Part (A)</b>  |          |      |                                |                    |         |
|          | <b>Grand Total of Schedule 4B</b>  |          |      |                                |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No. | Description   | Quantity | Unit | Civil Works (Excluding Taxes) |                    | Remarks |
|----------|---|----------|------|-------------------------------|--------------------|---------|
|          |   |          |      | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)      | (2)   | (3)      | (4)  | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Civil Works</b>  |          |      |                               |                    |         |
| <b>1</b> | <b>Steel Structure &amp; Rail</b>   |          |      |                               |                    |         |
| 1.1      | 132kV Disconnecting Switch  | 2        | Lot  |                               |                    |         |
| 1.2      | 132kV Current Transformer   | 3        | Lot  |                               |                    |         |
| 1.3      | 132kV Post Insulator  | 9        | Lot  |                               |                    |         |
| 1.4      | 132kV Lightning Arrestor  | 3        | Lot  |                               |                    |         |
| 1.5      | 33kV Disconnecting Switch with Earth Switch   | 3        | Lot  |                               |                    |         |
| 1.6      | 33kV Disconnecting Switch without Earth Switch  | 6        | Lot  |                               |                    |         |
| 1.7      | 33kV Current transformer  | 15       | Lot  |                               |                    |         |
| 1.8      | 33kV Lightning Arrestor   | 9        | Lot  |                               |                    |         |
| 1.9      | 33kV Post Insulator   | 15       | Lot  |                               |                    |         |
| 1.10     | 132 kV Gantry (4 Gantry + 2 Girder )  | 1        | Lot  |                               |                    |         |
|          | <b>Sub Total (1)</b>  |          |      |                               |                    |         |
| <b>2</b> | <b>Preliminary work</b>   |          |      |                               |                    |         |
| 2.1      | Clearing and Stripping  | 1        | Lot  |                               |                    |         |
| 2.2      | Site Grading, leveling  | 1        | Lot  |                               |                    |         |
| 2.3      | Exploration works including laboratory test, soil test, resistivity test etc, complete. | 1        | Lot  |                               |                    |         |
| 2.4      | Crushed rock surfacing for switchyard   | 4        | Lot  |                               |                    |         |
|          | <b>Sub Total (2)</b>  |          |      |                               |                    |         |



**Nepal Electricity Authority**  
**Transmission Directorate**  
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(Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No. | Description  | Quantity | Unit  | Civil Works (Excluding Taxes) |                    | Remarks |
|----------|--|----------|-------|-------------------------------|--------------------|---------|
|          |  |          |       | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)   | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>3</b> | <b>Reinforced Cement Concrete Foundation for Steel Structures</b> complete excavation, backfilling, forms, concrete works and reinforcement bars |          |       |                               |                    |         |
| 3.1      | 132/33kV Transformer with Rail Track, Set  | 60       | cu.m. |                               |                    |         |
| 3.2      | Modification of Foundation for Transformer with Rail for the load of 63MVA Power Transformer   | 30       | cu.m. |                               |                    |         |
| 3.3      | 132kV, Outdoor SF6 Circuit Breaker   | 1        | Lot   |                               |                    |         |
| 3.4      | 132 kV, Disconnecting Switch   | 2        | Lot   |                               |                    |         |
| 3.5      | 132kV Current Transformer, Nos.  | 3        | Nos   |                               |                    |         |
| 3.6      | 132kV Post Insulator   | 9        | Nos   |                               |                    |         |
| 3.7      | 132 kV Lightning Arrestor,   | 3        | Nos.  |                               |                    |         |
| 3.8      | 33kV Vacuum Circuit Breaker  | 4        | Lot   |                               |                    |         |
| 3.9      | 33kV Disconnecting Switch with Earth Switch  | 3        | Lot   |                               |                    |         |
| 3.10     | 33kV Disconnecting Switch without Earth Switch   | 6        | Lot   |                               |                    |         |
| 3.11     | 33kV Current transformer   | 15       | Nos   |                               |                    |         |
| 3.12     | 33kV Lightning Arrestor  | 9        | Nos.  |                               |                    |         |
| 3.13     | 33kV Post Insulator  | 15       | Nos.  |                               |                    |         |
| 3.14     | 132 kV Gantry (4 Gantry + 2 Girder )   | 1        | Lot   |                               |                    |         |
| 3.15     | New Cable Trench, Duct, Conduit (2.5*0.15)   | 100      | Metre |                               |                    |         |
|          | <b>Sub Total (3)</b>   |          |       |                               |                    |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 12 : Piluwa Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No.                          | Description  | Quantity | Unit | Civil Works (Excluding Taxes) |                    | Remarks |
|-----------------------------------|--|----------|------|-------------------------------|--------------------|---------|
|                                   |  |          |      | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)                               | (2)  | (3)      | (4)  | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>4</b>                          | <b>Dismantling and Transportation Works</b>  |          |      |                               |                    |         |
| 4.1                               | Dismantling and Removal of 132/33 kV 30 MVA Transformer and its accessories to safe location within Substation compound  | 1        | Lots |                               |                    |         |
| 4.2                               | Transportation of Power Transformer  |          |      |                               |                    |         |
| 4.2.1                             | Loading, Unloading and Transportation of 132/33kV, 63MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories from Dhalkebar to Piluwa Substation | 2        | Lots |                               |                    |         |
|                                   | <b>Sub Total (4)</b>   |          |      |                               |                    |         |
| <b>5</b>                          | <b>Miscellaneous outdoor Facility</b>  |          |      |                               |                    |         |
| 5.1                               | Identification Plates, Danger Notice Etc   | 1        | Lots |                               |                    |         |
|                                   | <b>Sub Total (5)</b>   |          |      |                               |                    |         |
| <b>Grand Total of Schedule 4C</b> |  |          |      |                               |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

Tender No. GOD/2078/079-06; Package 12 : Puluwa Substation

Price Schedule No. 5. Grand Summary ( Schedule Nos. 1 to 4)

| S.N.                              | Description   | Foreign Currency (USD) | Nepalese Rupees (NRs.) | Remarks |
|-----------------------------------|---|------------------------|------------------------|---------|
| 1                                 | Total Price Schedule No. 1. Plant, and Mandatory Spares Parts supplied from abroad                        |                        |                        |         |
| 2                                 | Total Price Schedule No. 2. Plant, and Mandatory Spares Parts supplied from within the Employer's country |                        |                        |         |
| 3                                 | Total Price Schedule No. 3. Design Services   |                        |                        |         |
| 4                                 | Schedule No. 4. Installation Services   |                        |                        |         |
| Part -A:                          | Local Transportation, Insurance and other Incidental services (including port clearance etc.)             |                        |                        |         |
| Part - B:                         | Installation Charges  |                        |                        |         |
| Part - C:                         | Civil Works   |                        |                        |         |
|                                   | Total of Price Schedule no.4: Installation and Other Services   |                        |                        |         |
| <b>Sub Total of Schedule No 4</b> |   |                        |                        |         |
| <b>Grand Total</b>                |   |                        |                        |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

### Schedule No.6. Recommended Spare Parts

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

# Price Schedules

**Tender No. GOD/2078/079-06; Package 13 : Kamane Substation**

## PREAMBLE

### A. General

|                   |  |
|-------------------|--|
| 1                 | <b>The Price Schedules are divided into separate Schedules as follows:</b>   |
| Schedule No. 1:   | Plant and Mandatory Spare Parts Supplied from Abroad   |
| Schedule No. 2:   | Plant and Mandatory Spare Parts Supplied from within the Employer's Country  |
| Schedule No. 3:   | Design Services (Not Applicable)   |
| Schedule No. 4:   | Installation and Other Services  |
| Schedule No. 5:   | Grand Summary  |
| Schedule No. 6:   | Recommended Spare Parts  |
| 2                 | The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.  |
| 3                 | If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.   |
| <b>B. Pricing</b> |  |
| 4                 | The units and rates in figures entered into the Price Schedules should be type written or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.<br>As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement. |
| 5                 | Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.<br>For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.<br>Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.   |
| 6                 | When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.  |
| 7                 | Bidders are instructed to quote the price schedule no. 1 (Plant, and Mandatory Spares Parts supplied from abroad) either in foreign currency (USD) or Nepalese Rupees (NRs.) and rest price schedule Price Schedule 2 (Plant, and Mandatory Spares Parts supplied Within Employer's Country) and Price Schedule No 4 (Installation Services) entirely in Nepalese Rupees (NRs).  |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 13 : Kamane Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description  | Country of Origin | Quantity | Unit  | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|-------|----------|--|--------------|---------|
|          |  |                   |          |       |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)   |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>A</b> | <b>Electrical Part</b>   |                   |          |       |          |  |              |         |
| <b>1</b> | <b>Main Items</b>  |                   |          |       |          |  |              |         |
| 1.1      | 132kV,1250 A Outdoor SF6 Circuit Breaker,three Pole type Complete with all accesories  |                   | 2        | Set   |          |  |              |         |
| 1.2      | 132kV 1250 A Disconnecting Switch without Earthing Switch complete with all accessories as specified   |                   | 2        | Set   |          |  |              |         |
| 1.3      | 132kV (150-300-600/1),5 core 30 VA Current Transformer with all accessories, as specified.   |                   | 6        | Nos   |          |  |              |         |
| 1.4      | 132 kV Lightning Arrestor with all accessories as specified  |                   | 6        | Nos   |          |  |              |         |
| 1.5      | 132kV Post Insulator   |                   | 18       | Nos   |          |  |              |         |
| 1.6      | 132/11 kV Transformer Control & Relay Panel, complete with all accessories as per specification(as per existing type)  |                   | 2        | Set   |          |  |              |         |
| 1.7      | 11kV VCB Switchgear Panel  |                   |          |       |          |  |              |         |
| 1.7.1    | 11 kV 2000A Indoor VCB switchgear Panel for Incomer with all accessories as specified  |                   | 1        | Set   |          |  |              |         |
| 1.7.2    | 11 kV 1250 A Indoor VCB switchgear Panel for Outgoing Feeder with all accessories as specified   |                   | 6        | Set   |          |  |              |         |
| 1.7.3    | 11 kV Indoor VCB switchgear Panel for Buscoupler with all accessories as specified   |                   | 1        | Set   |          |  |              |         |
| 1.7.4    | 11 kV Trunking Chamber with all accessories as specified   |                   | 1        | Lot   |          |  |              |         |
| 1.8      | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for Incomer (2 Cable per phase)                                   |                   | 1200     | Metre |          |  |              |         |
| 1.9      | 11 kV, 300 sq. mm three core XLPE Aluminium Cable including terminal Joints with all accessories complete for 11 kV Side as specified  |                   | 2000     | Metre |          |  |              |         |
| 1.10     | Adaption work for Bus Bar Protection   |                   | 1        | Lot   |          |  |              |         |
| 1.11     | 600 V Control Cable and Power cable required to complete the scope of work as specified  |                   | 1        | Lot   |          |  |              |         |
|          | <b>Sub Total (1)</b>   |                   |          |       |          |  |              |         |
| <b>2</b> | <b>Miscellaneous Materials</b>   |                   |          |       |          |  |              |         |
| 2.1      | 132 kV Insulator strings with clamps to complete the specified scope of works  |                   | 1        | Lot   |          |  |              |         |
| 2.2      | ACSR conductors for connecting with all accessories for 132kV Extension  |                   | 1        | Lot   |          |  |              |         |
| 2.3      | Aluminium Bus of suitable dimensions for extension of 132kV existing Main Bus with Clamp and Connector for Bus & Line Bay and all accessories as used in the Substation as per specification |                   | 180      | m     |          |  |              |         |
| 2.4      | Aluminium Pipe for 132kV Bus of suitable dimensions for interconnection of equipments and Bus Support as used in the Substation as per specification   |                   | 1        | Lot   |          |  |              |         |
|          | <b>Sub Total (2)</b>   |                   |          |       |          |  |              |         |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 13 : Kamane Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description  | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| <b>3</b> | <b>Grounding System</b>  |                   |          |      |          |  |              |         |
| 3.1      | Earthing of Transformer, Circuit Breaker, and other Equipment with Earthing Mat, Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete |                   | 1        | Lots |          |  |              |         |
| 3.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories to complete the specified scope of works  |                   | 1        | Lots |          |  |              |         |
|          | <b>Sub Total (3)</b>   |                   |          |      |          |  |              |         |
| <b>4</b> | <b>Illumination system</b>   |                   |          |      |          |  |              |         |
| 4.1      | Switchyard Lighting as specified, Lot  |                   | 1        | Lot  |          |  |              |         |
|          | <b>Sub Total (4)</b>   |                   |          |      |          |  |              |         |
|          | <b>Total of Electrical Part (A)</b>  |                   |          |      |          |  |              |         |
| <b>B</b> | <b>Civil Part</b>  |                   |          |      |          |  |              |         |
| <b>5</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories:   |                   |          |      |          |  |              |         |
| 5.1      | 132kV Disconnecting Switch   |                   | 2        | Lot  |          |  |              |         |
| 5.2      | 132kV Current Transformer  |                   | 6        | Lot  |          |  |              |         |
| 5.3      | 132kV Post Insulator   |                   | 18       | Lot  |          |  |              |         |
| 5.4      | 132kV Lightning Arrestor   |                   | 6        | Lot  |          |  |              |         |
| 5.5      | Cable Support Structure for XLPE Cable in Transformer  |                   | 2        | Lot  |          |  |              |         |
|          | <b>Sub Total (5)</b>   |                   |          |      |          |  |              |         |
|          | <b>Total of Civil Part (B)</b>   |                   |          |      |          |  |              |         |
| <b>C</b> | <b>Spare Part</b>  |                   |          |      |          |  |              |         |
| <b>6</b> | <b>For Control and Relay Panel</b>   |                   |          |      |          |  |              |         |
| 6.1      | Indicating Lamps(100% of used), Lot  |                   | 1        | Lot  |          |  |              |         |
| 6.2      | Fuses of each type(100% of used), Lot  |                   | 1        | Lot  |          |  |              |         |
| 6.3      | Color caps for each color for indicating lamps(20% of used), Lot   |                   | 1        | Lot  |          |  |              |         |
| 6.4      | One of each type of Switch, Relay, Timer and other Special Device, Lot   |                   | 1        | Lot  |          |  |              |         |
| 6.5      | Each type of Auxiliary Relays(1each), Lot  |                   | 1        | Lot  |          |  |              |         |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 13 : Kamane Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description  | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 6.6      | <b>Protection Relays</b>                                     |                   |          |      |          |  |              |         |
| 6.6.1    | 3 Phase over current relays, Set                             |                   | 3        | Nos  |          |  |              |         |
| 6.6.2    | Ground Fault Relays(1each), No.                              |                   |          |      |          |  |              |         |
| 6.6.3    | Tripping Control Circuit Relays, No                          |                   | 1        | Nos  |          |  |              |         |
| 6.7      | Ammeter(1 each), No  |                   | 1        | Nos  |          |  |              |         |
| 6.8      | MVA Meter, No  |                   | 1        | Nos  |          |  |              |         |
| 6.9      | Volt meter (1 Each), No                                      |                   | 1        | Nos  |          |  |              |         |
|          | <b>Sub Total of (6)</b>                                      |                   |          |      |          |  |              |         |
| 7        | <b>For 132kV SF6 Circuit Breaker</b>                         |                   |          |      |          |  |              |         |
| 7.1      | Tripping Coils   |                   | 3        | Nos. |          |  |              |         |
| 7.2      | Closing Coils,   |                   | 3        | Nos. |          |  |              |         |
| 7.3      | Pressure Switches, Relays and Contactors (One of each type), |                   | 1        | Set  |          |  |              |         |
| 7.4      | Motor for Mechanism  |                   | 1        | Nos. |          |  |              |         |
| 7.5      | Complete Sets of O-rings and Gaskets                         |                   | 1        | Lot  |          |  |              |         |
| 7.6      | SF6 Gas filling Nozzle & Adaptor                             |                   | 1        | Nos. |          |  |              |         |
|          | <b>Sub Total of (7)</b>                                      |                   |          |      |          |  |              |         |
| 8        | <b>For 132kV Disconnecting Switches</b>                      |                   |          |      |          |  |              |         |
| 8.1      | Main contact assemblies, Set                                 |                   | 1        | Sets |          |  |              |         |
| 8.2      | Auxiliary contacts, Set                                      |                   | 1        | Sets |          |  |              |         |
| 8.3      | Interlocking coil, Set                                       |                   | 1        | Sets |          |  |              |         |
|          | <b>Sub Total of (8)</b>                                      |                   |          |      |          |  |              |         |
| 9        | <b>Spare Parts For 11kV Panels</b>                           |                   |          |      |          |  |              |         |
| 9.1      | 11kV Vacuum Interrupter for Incomer / Bus Coupler Feeder     |                   | 3        | Nos. |          |  |              |         |
| 9.2      | 11kV Vacuum Interrupter for Outgoing Feeder                  |                   | 3        | Nos. |          |  |              |         |
| 9.3      | Tripping Coils   |                   | 6        | Nos. |          |  |              |         |
| 9.4      | Closing Coils  |                   | 6        | Nos. |          |  |              |         |
| 9.5      | Spring Charging Motor  |                   | 3        | Set  |          |  |              |         |






**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 13 : Kamane Substation**

**Price Schedule 1. Plant, and Mandatory Spares Parts supplied from abroad**

| Item No. | Description  | Country of Origin | Quantity | Unit | Currency | Total CIP-Nepal Border Price<br>(Excluding Taxes and Duties) |              | Remarks |
|----------|--|-------------------|----------|------|----------|--|--------------|---------|
|          |  |                   |          |      |          | Unit Rate  | Total Amount |         |
| (1)      | (2)  |                   | (3)      | (4)  |          | (5)  | (6)=(3)x(5)  | (7)     |
| 9.6      | <b>Protection Relays</b>                             |                   |          |      |          |  |              |         |
| 9.6.1    | 3 phase Overcurrent+Earth fault Relay, for 11kV side |                   | 1        | Set  |          |  |              |         |
| 9.7      | Ammeter  |                   | 3        | Nos. |          |  |              |         |
| 9.8      | Voltmeter  |                   | 3        | Nos. |          |  |              |         |
| 9.9      | kVA Meter  |                   | 3        | Nos. |          |  |              |         |
| 9.10     | 11kV CTs as in Outgoing Feeder                       |                   | 3        | Nos. |          |  |              |         |
| 9.11     | 11kV CTs as in Incomer / Bus Coupler Feeder          |                   | 3        | Nos. |          |  |              |         |
| 9.12     | Operating Handle                                     |                   | 3        | Nos. |          |  |              |         |
| 9.13     | Indicating lamps (100% of used)                      |                   | 3        | Lot  |          |  |              |         |
|          | <b>Sub Total of (9)</b>                              |                   |          |      |          |  |              |         |
|          | <b>Total of Spare Part (C)</b>                       |                   |          |      |          |  |              |         |
|          | <b>Grand Total of Schedule 1</b>                     |                   |          |      |          |  |              |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

|      |  |
|------|--|
| Note | The prices shall be quoted either in the currency of Nepalese Rupees (NRs.) or foreign currency (USD) only as per ITB 19.1 of the BDS. |
|------|--|




**Tender No. GOD/2078/079-06; Package 13 : Kamane Substation**

1. If a Bidder wishes to Supply some item(s) listed in Price Schedule no. 1 from manufacturing plant in Nepal, then such item(s) and price of such item(s) shall be quoted in this Price Schedule no. 2 only. Columns against such item(s) shall be left blank in Price Schedule no. 1.
2. Item No. in the following table shall match those in Price Schedule no. 1

### Price Schedule 2. Plant, and Mandatory Spares Parts supplied Within Employer's Country

| <b>Item No.</b> | <b>Description</b>               | <i>Quantity</i> | <i>Unit</i> | <b>Total EXW Price (Excluding Taxes and Duties)</b> |                              | <b>Remarks</b> |
|-----------------|----------------------------------|-----------------|-------------|---|------------------------------|----------------|
|                 |                                  |                 |             | <i>Unit Price at<br/>EXW(NPR)</i>                   | <b>Total EXW Price (NPR)</b> |                |
| (1)             | (2)                              | (3)             | (4)         | (5)   | (6)=(3)x(5)                  | (7)            |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 |                                  |                 |             |   |                              |                |
|                 | <b>Grand Total of Schedule 2</b> |                 |             |   |                              |                |

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**

**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**

**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 13 : Kamane Substation**

**Price Schedule No 3: Design Services**

| Item | Description  | Qty.                  | Unit Price <sup>#</sup> |                                     | Total Price <sup>#</sup> |                                    |
|------|--|-----------------------|-------------------------|-------------------------------------|--------------------------|------------------------------------|
|      |  |                       | Local Currency Portion  | Foreign Currency Portion (optional) | LocalCurrency Portion    | Foreign currency Portion(optional) |
| (1)  | (2)  | (3)                   | (4)                     | (5)                                 | (6)=(4)x(3)              | (7)=(5)x(3)                        |
|      | The scope of the Contract covers the detail design as well. The price of the detail design is deemed to have been covered in the prices of the other schedules | <b>Not Applicable</b> |                         |                                     |                          |                                    |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 13 : Kamane Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit  | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|-------|--|--------------------|---------|
|          |  |          |       | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)   | (5)  | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>   |          |       |  |                    |         |
| <b>1</b> | <b>Main Items</b>  |          |       |  |                    |         |
| 1.1      | 132kV,1250 A Outdoor SF6 Circuit Breaker,three Pole type Complete with all accessories   | 2        | Set   |  |                    |         |
| 1.2      | 132kV 1250 A Disconnecting Switch without Earthing Switch complete with all accessories as specified   | 2        | Set   |  |                    |         |
| 1.3      | 132kV (150-300-600/1),5 core 30 VA Current Transformer with all accessories, as specified.   | 6        | Nos   |  |                    |         |
| 1.4      | 132 kV Lightning Arrestor with all accessories as specified  | 6        | Nos   |  |                    |         |
| 1.5      | 132kV Post Insulator   | 18       | Nos   |  |                    |         |
| 1.6      | 132/11 kV Transformer Control & Relay Panel, complete with all accessories as per specification(as per existing type)                                      | 2        | Set   |  |                    |         |
| 1.7      | 11kV VCB Switchgear Panel  |          |       |  |                    |         |
| 1.7.1    | 11 kV 2000A Indoor VCB switchgear Panel for Incomer with all accessories as specified  | 1        | Set   |  |                    |         |
| 1.7.2    | 11 kV 1250 A Indoor VCB switchgear Panel for Outgoing Feeder with all accessories as specified   | 6        | Set   |  |                    |         |
| 1.7.3    | 11 kV Indoor VCB switchgear Panel for Buscoupler with all accessories as specified   | 1        | Set   |  |                    |         |
| 1.7.4    | 11 kV Trunking Chamber with all accessories as specified   | 1        | Lot   |  |                    |         |
| 1.8      | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for Incomer (2 Cable per phase) | 1200     | Metre |  |                    |         |
| 1.9      | 11 kV, 300 sq. mm three core XLPE Aluminium Cable including terminal Joints with all accessories complete for 11 kV Side as specified                      | 2000     | Metre |  |                    |         |
| 1.10     | Adaption work for Bus Bar Protection   | 1        | Lot   |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 13 : Kamane Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 1.11     | 600 V Control Cable and Power cable required to complete the scope of work as specified  | 1        | Lot  |  |                    |         |
|          | <b>Sub Total (1)</b>   |          |      |  |                    |         |
| <b>2</b> | <b>Miscellaneous Materials</b>   |          |      |  |                    |         |
| 2.1      | 132 kV Insulator strings with clamps to complete the specified scope of works  | 1        | Lot  |  |                    |         |
| 2.2      | ACSR conductors for connecting with all accessories for 132kV Extension  | 1        | Lot  |  |                    |         |
| 2.3      | Aluminium Bus of suitable dimensions for extension of 132kV existing Main Bus with Clamp and Connector for Bus & Line Bay and all accessories as used in the Substation as per specification                                   | 180      | m    |  |                    |         |
| 2.4      | Aluminium Pipe for 132kV Bus of suitable dimensions for interconnection of equipments and Bus Support as used in the Substation as per specification   | 1        | Lot  |  |                    |         |
|          | <b>Sub Total (2)</b>   |          |      |  |                    |         |
| <b>3</b> | <b>Grounding System</b>  |          |      |  |                    |         |
| 3.1      | Earthing of Transformer, Circuit Breaker, and other Equipment with Earthing Mat, Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete | 1        | Lots |  |                    |         |
| 3.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories to complete the specified scope of works  | 1        | Lots |  |                    |         |
|          | <b>Sub Total (3)</b>   |          |      |  |                    |         |
| <b>4</b> | <b>Illumination system</b>   |          |      |  |                    |         |
| 4.1      | Switchyard Lighting as specified, Lot  | 1        | Lot  |  |                    |         |
|          | <b>Sub Total (4)</b>   |          |      |  |                    |         |
|          | <b>Total of Electrical Part (A)</b>  |          |      |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 13 : Kamane Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| <b>B</b> | <b>Civil Part</b>  |          |      |  |                    |         |
| <b>5</b> | Steel structure for post, beam and equipment supporting frame complete with bolts, nuts and all accessories: |          |      |  |                    |         |
| 5.1      | 132kV Disconnecting Switch   | 2        | Lot  |  |                    |         |
| 5.2      | 132kV Current Transformer  | 6        | Lot  |  |                    |         |
| 5.3      | 132kV Post Insulator   | 18       | Lot  |  |                    |         |
| 5.4      | 132kV Lightning Arrestor   | 6        | Lot  |  |                    |         |
| 5.5      | Cable Support Structure for XLPE Cable in Transformer  | 2        | Lot  |  |                    |         |
|          | <b>Sub Total (5)</b>   |          |      |  |                    |         |
|          | <b>Total of Civil Part (B)</b>   |          |      |  |                    |         |
| <b>C</b> | <b>Spare Part</b>  |          |      |  |                    |         |
| <b>6</b> | <b>For Control and Relay Panel</b>   |          |      |  |                    |         |
| 6.1      | Indicating Lamps(100% of used), Lot  | 1        | Lot  |  |                    |         |
| 6.2      | Fuses of each type(100% of used), Lot  | 1        | Lot  |  |                    |         |
| 6.3      | Color caps for each color for indicating lamps(20% of used), Lot   | 1        | Lot  |  |                    |         |
| 6.4      | One of each type of Switch, Relay, Timer and other Special Device, Lot                                       | 1        | Lot  |  |                    |         |
| 6.5      | Each type of Auxiliary Relays(1each), Lot  | 1        | Lot  |  |                    |         |
| 6.6      | <b>Protection Relays</b>   |          |      |  |                    |         |
| 6.6.1    | 3 Phase over current relays, Set   | 3        | Nos  |  |                    |         |
| 6.6.2    | Ground Fault Relays(1each), No.  |          |      |  |                    |         |
| 6.6.3    | Tripping Control Circuit Relays, No  | 1        | Nos  |  |                    |         |
| 6.7      | Ammeter(1 each), No  | 1        | Nos  |  |                    |         |
| 6.8      | MVA Meter, No  | 1        | Nos  |  |                    |         |
| 6.9      | Volt meter (1 Each), No  | 1        | Nos  |  |                    |         |
|          | <b>Sub Total of (6)</b>  |          |      |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 13 : Kamane Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 7        | <b>For 132kV SF6 Circuit Breaker</b>                         |          |      |  |                    |         |
| 7.1      | Tripping Coils   | 3        | Nos. |  |                    |         |
| 7.2      | Closing Coils,   | 3        | Nos. |  |                    |         |
| 7.3      | Pressure Switches, Relays and Contactors (One of each type), | 1        | Set  |  |                    |         |
| 7.4      | Motor for Mechanism  | 1        | Nos. |  |                    |         |
| 7.5      | Complete Sets of O-rings and Gaskets                         | 1        | Lot  |  |                    |         |
| 7.6      | SF6 Gas filling Nozzle & Adaptor                             | 1        | Nos. |  |                    |         |
|          | <b>Sub Total of (7)</b>                                      |          |      |  |                    |         |
| 8        | <b>For 132kV Disconnecting Switches</b>                      |          |      |  |                    |         |
| 8.1      | Main contact assemblies, Set                                 | 1        | Sets |  |                    |         |
| 8.2      | Auxiliary contacts, Set                                      | 1        | Sets |  |                    |         |
| 8.3      | Interlocking coil, Set                                       | 1        | Sets |  |                    |         |
|          | <b>Sub Total of (8)</b>                                      |          |      |  |                    |         |
| 9        | <b>Spare Parts For 11kV Panels</b>                           |          |      |  |                    |         |
| 9.1      | 11kV Vacuum Interrupter for Incomer / Bus Coupler Feeder     | 3        | Nos. |  |                    |         |
| 9.2      | 11kV Vacuum Interrupter for Outgoing Feeder                  | 3        | Nos. |  |                    |         |
| 9.3      | Tripping Coils   | 6        | Nos. |  |                    |         |
| 9.4      | Closing Coils  | 6        | Nos. |  |                    |         |
| 9.5      | Spring Charging Motor  | 3        | Set  |  |                    |         |




# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations (Schedules of Rates and Prices)

Tender No. GOD/2078/079-06; Package 13 : Kamane Substation

#### Price Schedule No 4. Installation Services

Part- A: Local Transportation, Insurance and other Incidental services (including port clearance etc.)

| Item No. | Description  | Quantity | Unit | Insurance, Clearing, Forwarding and Transportation upto site |                    | Remarks |
|----------|--|----------|------|--|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)   | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)  | (6)=(3)x(5)        | (7)     |
| 9.6      | <b>Protection Relays</b>                             |          |      |  |                    |         |
| 9.6.1    | 3 phase Overcurrent+Earth fault Relay, for 11kV side | 1        | Set  |  |                    |         |
| 9.7      | Ammeter  | 3        | Nos. |  |                    |         |
| 9.8      | Voltmeter  | 3        | Nos. |  |                    |         |
| 9.9      | kVA Meter  | 3        | Nos. |  |                    |         |
| 9.10     | 11kV CTs as in Outgoing Feeder                       | 3        | Nos. |  |                    |         |
| 9.11     | 11kV CTs as in Incomer / Bus Coupler Feeder          | 3        | Nos. |  |                    |         |
| 9.12     | Operating Handle                                     | 3        | Nos. |  |                    |         |
| 9.13     | Indicating lamps (100% of used)                      | 3        | Lot  |  |                    |         |
|          | <b>Sub Total of (9)</b>                              |          |      |  |                    |         |
|          | <b>Total of Spare Part (C)</b>                       |          |      |  |                    |         |
|          | <b>Grand Total of Schedule 4A</b>                    |          |      |  |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_






# Nepal Electricity Authority

## Transmission Directorate

### Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations

#### (Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 13 : Kamane Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description  | Quantity | Unit  | Installation (Excluding Taxes) |                    | Remarks |
|----------|--|----------|-------|--------------------------------|--------------------|---------|
|          |  |          |       | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)   | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Electrical Part</b>   |          |       |                                |                    |         |
| <b>1</b> | <b>Main Items</b>  |          |       |                                |                    |         |
| 1.1      | 132/11kV, 22.5MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories as specified         | 2        | Set   |                                |                    |         |
| 1.2      | 132kV,1250 A Outdoor SF6 Circuit Breaker,three Pole type Complete with all accesories  | 2        | Set   |                                |                    |         |
| 1.3      | 132kV 1250 A Disconnecting Switch without Earthing Switch complete with all accessories as specified   | 2        | Set   |                                |                    |         |
| 1.4      | 132kV (150-300-600/1),5 core 30 VA Current Transformer with all accessories, as specified.   | 6        | Nos   |                                |                    |         |
| 1.5      | 132 kV Lightning Arrestor with all accessories as specified  | 6        | Nos   |                                |                    |         |
| 1.6      | 132kV Post Insulator   | 18       | Nos   |                                |                    |         |
| 1.7      | 132/11 kV Transformer Control & Relay Panel, complete with all accessories as per specification(as per existing type)                                      | 2        | Set   |                                |                    |         |
| 1.8      | 11kV VCB Switchgear Panel  |          |       |                                |                    |         |
| 1.8.1    | 11 kV 2000A Indoor VCB switchgear Panel for Incomer with all accessories as specified  | 1        | Set   |                                |                    |         |
| 1.8.2    | 11 kV 1250 A Indoor VCB switchgear Panel for Outgoing Feeder with all accessories as specified   | 6        | Set   |                                |                    |         |
| 1.8.3    | 11 kV Indoor VCB switchgear Panel for Buscoupler with all accessories as specified   | 1        | Set   |                                |                    |         |
| 1.8.4    | 11 kV Trunking Chamber with all accessories as specified   | 1        | Lot   |                                |                    |         |
| 1.9      | 11 kV, 630 sq. mm single core XLPE Copper Power Cable including terminal Joints for both end with all accessories complete for Incomer (2 Cable per phase) | 1200     | Metre |                                |                    |         |
| 1.10     | 11 kV, 300 sq. mm three core XLPE Aluminium Cable including terminal Joints with all accessories complete for 11 kV Side as specified                      | 2000     | Metre |                                |                    |         |
| 1.11     | Adaption work for Bus Bar Protection   | 1        | Lot   |                                |                    |         |
| 1.12     | 600 V Control Cable and Power cable required to complete the scope of work as specified  | 1        | Lot   |                                |                    |         |
|          | <b>Sub Total (1)</b>   |          |       |                                |                    |         |




**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

**Tender No. GOD/2078/079-06; Package 13 : Kamane Substation**

Price Schedule No 4. Installation Services

Part - B: Installation Charges

| Item No. | Description  | Quantity | Unit | Installation (Excluding Taxes) |                    | Remarks |
|----------|--|----------|------|--------------------------------|--------------------|---------|
|          |  |          |      | Unit Rate(NPR)                 | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)  | (5)                            | (6)=(3)x(5)        | (7)     |
| <b>2</b> | <b>Miscellaneous Materials</b>   |          |      |                                |                    |         |
| 2.1      | 132 kV Insulator strings with clamps to complete the specified scope of works  | 1        | Lot  |                                |                    |         |
| 2.2      | ACSR conductors for connecting with all accessories for 132kV Extension  | 1        | Lot  |                                |                    |         |
| 2.3      | Aluminium Bus of suitable dimensions for extension of 132kV existing Main Bus with Clamp and Connector for Bus & Line Bay and all accessories as used in the Substation as per specification                                   | 180      | m    |                                |                    |         |
| 2.4      | Aluminium Pipe for 132kV Bus of suitable dimensions for interconnection of equipments and Bus Support as used in the Substation as per specification   | 1        | Lot  |                                |                    |         |
|          | <b>Sub Total (2)</b>   |          |      |                                |                    |         |
| <b>3</b> | <b>Grounding System</b>  |          |      |                                |                    |         |
| 3.1      | Earthing of Transformer, Circuit Breaker, and other Equipment with Earthing Mat, Buried Copper strips/Conductors with Risers, Electrode grounding materials and accessories to complete the specified scope of works, complete | 1        | Lots |                                |                    |         |
| 3.2      | Galvanized E.H.S. steel wires of size 7/3.35 for lightning shield wire in take off and internal structures, with accessories to complete the specified scope of works  | 1        | Lots |                                |                    |         |
|          | <b>Sub Total (3)</b>   |          |      |                                |                    |         |
| <b>4</b> | <b>Illumination system</b>   |          |      |                                |                    |         |
| 4.1      | Switchyard Lighting as specified, Lot  | 1        | Lot  |                                |                    |         |
|          | <b>Sub Total (4)</b>   |          |      |                                |                    |         |
|          | <b>Total of Electrical Part (A)</b>  |          |      |                                |                    |         |
|          | <b>Grand Total of Schedule 4B</b>  |          |      |                                |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 13 : Kamane Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No. | Description  | Quantity | Unit  | Civil Works (Excluding Taxes) |                    | Remarks |
|----------|--|----------|-------|-------------------------------|--------------------|---------|
|          |  |          |       | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)      | (2)  | (3)      | (4)   | (5)                           | (6)=(3)x(5)        | (7)     |
| <b>A</b> | <b>Civil Works</b>   |          |       |                               |                    |         |
| <b>1</b> | <b>Steel Structure &amp; Rail</b>  |          |       |                               |                    |         |
| 1.1      | 132kV Disconnecting Switch   | 2        | Lot   |                               |                    |         |
| 1.2      | 132kV Current Transformer  | 6        | Lot   |                               |                    |         |
| 1.3      | 132kV Post Insulator   | 18       | Lot   |                               |                    |         |
| 1.4      | 132kV Lightning Arrestor   | 6        | Lot   |                               |                    |         |
| 1.5      | Cable Support Structure for XLPE Cable in Transformer  | 2        | Lot   |                               |                    |         |
|          | <b>Sub Total (1)</b>   |          |       |                               |                    |         |
| <b>2</b> | <b>Preliminary work</b>  |          |       |                               |                    |         |
| 2.1      | Clearing and Stripping   | 2        | Lot   |                               |                    |         |
| 2.2      | Site Grading, leveling   | 2        | Lot   |                               |                    |         |
| 2.3      | Exploration works including laboratory test, soil test, resistivity test etc, complete.  | 2        | Lot   |                               |                    |         |
| 2.4      | Crushed rock surfacing for switchyard  | 526.8    | cu.m. |                               |                    |         |
|          | <b>Sub Total (2)</b>   |          |       |                               |                    |         |
| <b>3</b> | <b>Reinforced Cement Concrete Foundation for Steel Structures complete excavation, backfilling, forms, concrete works and reinforcement bars</b> |          |       |                               |                    |         |
| 3.1      | 132/11kV Transformer with Rail Track, Set  | 75.00    | Cu.m. |                               |                    |         |
| 3.2      | 132kV, Outdoor SF6 Circuit Breaker   | 2        | Lot   |                               |                    |         |
| 3.3      | 132kV Disconnecting Switch   | 2        | Lot   |                               |                    |         |
| 3.4      | 132kV Current Transformer  | 6        | Lot   |                               |                    |         |
| 3.5      | 132kV Post Insulator   | 18       | Lot   |                               |                    |         |



**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
(Schedules of Rates and Prices)

**Tender No. GOD/2078/079-06; Package 13 : Kamane Substation**

Price Schedule No 4. Installation Services

Part - C: Civil Works

| Item No.                          | Description  | Quantity | Unit  | Civil Works (Excluding Taxes) |                    | Remarks |
|-----------------------------------|--|----------|-------|-------------------------------|--------------------|---------|
|                                   |  |          |       | Unit Rate(NPR)                | Total Amount (NPR) |         |
| (1)                               | (2)  | (3)      | (4)   | (5)                           | (6)=(3)x(5)        | (7)     |
| 3.6                               | 132kV Lightning Arrestor   | 6        | Lot   |                               |                    |         |
| 3.7                               | Cable Support Structure for XLPE Cable in Transformer  | 2        | Lot   |                               |                    |         |
| 3.8                               | New Cable Trench, Duct, Conduit (2.5*0.15)   | 200      | Metre |                               |                    |         |
|                                   | <b>Sub Total (3)</b>   |          |       |                               |                    |         |
| <b>4</b>                          | <b>Dismantling and Transportation Works</b>  |          |       |                               |                    |         |
| 4.1                               | Dismantling of 132 kV Gantry accessories to safe location within Substation compound   | 1        | Lot   |                               |                    |         |
| 4.2                               | Transportation of Power Transformer  |          |       |                               |                    |         |
| 4.2.1                             | Loading, Unloading and Transportation of 132/11kV, 22.5MVA Power Transformer with OLTC, RTCC Facility, LA Mounted on LV & HV side and Bushing CT Complete with all accessories from Bhaktapur to Kamane Substation | 2        | Lot   |                               |                    |         |
|                                   | <b>Sub Total (4)</b>   |          |       |                               |                    |         |
| <b>5</b>                          | <b>Miscellaneous outdoor Facility</b>  |          |       |                               |                    |         |
| 5.1                               | Identification Plates, Danger Notice Etc   | 1        | Lots  |                               |                    |         |
|                                   | <b>Sub Total (5)</b>   |          |       |                               |                    |         |
| <b>Grand Total of Schedule 4C</b> |  |          |       |                               |                    |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_

**Nepal Electricity Authority**  
**Transmission Directorate**  
**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations**  
**(Schedules of Rates and Prices)**

Tender No. GOD/2078/079-06; Package 13 : Kamane Substation

Price Schedule No. 5. Grand Summary ( Schedule Nos. 1 to 4)

| S.N.                              | Description   | Foreign Currency (USD) | Nepalese Rupees (NRs.) | Remarks |
|-----------------------------------|---|------------------------|------------------------|---------|
| 1                                 | Total Price Schedule No. 1. Plant, and Mandatory Spares Parts supplied from abroad                        |                        |                        |         |
| 2                                 | Total Price Schedule No. 2. Plant, and Mandatory Spares Parts supplied from within the Employer's country |                        |                        |         |
| 3                                 | Total Price Schedule No. 3. Design Services   |                        |                        |         |
| 4                                 | Schedule No. 4. Installation Services   |                        |                        |         |
| Part -A:                          | Local Transportation, Insurance and other Incidental services (including port clearance etc.)             |                        |                        |         |
| Part - B:                         | Installation Charges  |                        |                        |         |
| Part - C:                         | Civil Works   |                        |                        |         |
|                                   | Total of Price Schedule no.4: Installation and Other Services   |                        |                        |         |
| <b>Sub Total of Schedule No 4</b> |   |                        |                        |         |
| <b>Grand Total</b>                |   |                        |                        |         |

Signature of Bidder \_\_\_\_\_

Name of Bidder \_\_\_\_\_




**Supply, Delivery, Installation, Testing and Commissioning of Power Transformers at Various Substations  
(Schedules of Rates and Prices)**

### Schedule No.6. Recommended Spare Parts

[illegible]

Signature of Bidder \_\_\_\_\_  
Name of Bidder \_\_\_\_\_