NEPAL ELECTRICITY AUTHORITY

(An Undertaking of Government of Nepal)

Distribution and Consumer Service Directorate

BUTWAL REGIONAL OFFICE

National Competitive Bidding (NCB)

(Two Envelope Bidding Procedures)

TENDER NO. : BRO/2074/075-12(RE)

SUPPLY, DELIVERY, INSTALLATION/ERECTION, TESTING AND COMMISSIONING OF HADHADE, PIPALDHARA, MARPHUNG, CHHAPHILE, JAISITHOK AND OTHER VDCS ELECTRIFICATION, GULMI

March 2018

Abbreviations

BD ... .Bidding Document
BDF .... Bidding Forms
BDS .... Bid Data Sheet
BOQ ... . Bill of Quantities
CBO ..... Community Based Organization
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
ICC ... . International Chamber of Commerce
IFB ……..... Invitation for Bids
ITB ... . Instructions to Bidders
JV ... . Joint Venture
LIT ... . Litigation
NCB ... . National Competitive Bidding
PAN ... . Permanent Account Number
PPA ... . Public Procurement Act
PPMO ... . Public Procurement Monitoring Office
PPR ... . Public Procurement Regulations
PL ... .Profit & Loss
SBD .... Standard Bidding Document
SCC ... . Special Conditions of Contract
TS ... .Technical Specifications
VAT ... . Value Added Tax
WRQ ... . Works Requirements

Table of Contents

Invitation for Bids I

Part – I Bidding Procedures I-1 to IV-21

Section – I Instructions to Bidders I-1 to I-25
Section – II Bid Data Sheet II-1 to II-11
Section – III Evaluation and Qualification Criteria III-1 to III-12
Section – IV Bidding Forms IV-1 to IV-21
Section-V Eligible Countries

Part –II Requirements V-1 to VI-16

Section – VI Works Requirements V-1 to V-194
Section - VII Bill of Quantities VI-1 to VI-16

Part – III Conditions of Contract and Contract Forms VII-1 to IX-6

Section – VIII General Conditions of Contract VII-1 to VII-28
Section – IX Special Conditions of Contract VIII-1 to VIII-16
Section – X Contract Forms IX-1 to IX-6

`Nepal Electricity Authority
Distribution and consumer service Directorate
Butwal Regional Office
Kalikanagar, Butwal.

Re-Invitation for Bids

for

Supply, Delivery, Installation, Erection, Testing and Commissioning of Hadhade, Pipaldhara, Marbhung, Chhaphile, Jaisithok and other VDC Electrification, Gulmi.

IFB No.: BRO/2074/075-12 (Re)

(Date of publication: 2074.12.05)

1. The Government of Nepal [GoN] has allocated funds towards the cost **of *Hadhade, Pipaldhara, Marbhung, Chhaphile, Jaisithok and other VDC Electrification*** **Program at Gulmi** and intends to apply part of the funds to cover eligible payments under the Contract for *Supply,Delivery, Installation, Erection, Testing and Commissioning of Hadhade, Pipaldhara, Marbhung, Chhaphile, Jaisithok and other VDC Electrification at Gulmi.* IFB ***No. BRO/2074/075-12 (Re).*** Bidding is open to all eligible Nepalese Bidders.
2. Nepal Electricity Authority, Butwal Regional Office invites sealed bids from eligible bidders for the *Supply, Delivery, Installation, Erection, Testing and Commissioning of Hadhade, Pipaldhara, Marbhung, Chhaphile, Jaisithok and other VDC Electrification at Gulmi* under National Competitive Bidding – Single Stage Two Envelope Bidding procedures.

   Only eligible bidders with the following key qualifications should participate in this bidding:
   - **Minimum Average Annual Construction Turnover of the best 3 years within the last 10 years** : *Minimum average annual turnover of Rs.* ***4,34,00,000.00.***
   - **Minimum Work experience of similar size and nature***: At least* ***(1) One contract*** *within the last ten (10) years, with a value of at least* ***Rs. 5,20,00,000.00****. that has been successfully or is substantially completed and that is similar to the proposed work.*
3. Under the Single Stage Two Envelop Procedure, Bidders are required to submit simultaneously two separate sealed envelopes , one containing (i) the Technical Bid and the other (ii) the Price Bid both in turn enclosed in one sealed envelop as per the provision of the Bidding Document.
4. Eligible Bidders may obtain further information and inspect the Bidding Documents at the office of

   Nepal Electricity Authority
   Distribution and consumer service Directorate
   Butwal Regional Office
   Kalikanagar, Butwal, Rupandehi
   Telephone: 071-438584,437735
   E-mail: neabutwalro@gmail.com

   or may visit NEA website www.nea.org.np.
5. A complete set of Bidding Documents may be purchased from the office as mentioned above by eligible Bidders on the submission of a written application, along with the copy of notarized company/firm registration certificate, VAT and PAN registration certificate and upon payment of a non-refundable fee of ***NRs. 5000.00*** (in ,words Nepalese Rupees Five Thousand Only) **within**

office hours on 19 Chaitra, 2074. Information to deposit the cost of bidding document in Bank:
Name of the Bank: **Jyoti Bikas Bank Ltd., Butwal**
Name of Office: **Butwal Regional Office**
Office Account no.: **00200200100008737000001**

6. The last date of submission shall be **12:00 Hours NST, on 20 Chaitra, 2074**. Bids received after this deadline will be rejected.

7. The bids will be opened in the presence of Bidders' representatives who choose to attend at 14:00 Hours NST, on 20 Chaitra, 2074 at the office of Butwal Regional office, Kalikanagar,Butwal,Rupandehi. Bids must be valid for a period of 90 days after bid opening and must be accompanied by a bid security amounting to **Rs. 18,00,000.00 (Eighteen lakh Rupees only**) which shall be valid for 30 days beyond the validity period of the bid.
8. 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.
9. In the comparison of Bids, Domestic Preference Scheme will be applied in accordance with the provisions stipulated in the Bidding Document.
10. 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.
11. 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.

Part - I

BIDDING PROCEDURES

Table of Clauses

Section - I Instructions to Bidders I-1 to I-25

A. General I-1
1. Scope of Bid I-1
2. Source of Funds I-1
3. Fraud and Corruption I-2
4. Eligible Bidders I-4
5. Eligible Materials, Equipment and Services I-6

B. Contents of Bidding Document I-7
6. Section of Bidding Document I-7
7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting I-7
8. Amendment of Bidding Document I-9

C. Preparation of Bids I-9
9. Cost of Bidding I-9
10. Language of Bid I-9
11. Documents Comprising the Bid I-9
12. Letter of Bid and Schedules I-10
13. Alternative Bids I-10
14. Bid Prices and Discounts I-11
15. Currency of Bid and Payment I-12
16. Documents Comprising the Technical Proposal I-12
17. Documents Establishing the Qualifications of the Bidder I-12
18. Period of Validity of Bids I-12
19. Bid Security I-12
20. Format and Signing of Bid I-14

D. Submission and Opening of Bids I-14
21. Sealing and Marking of Bids I-14
22. Deadline for Submission of Bids I-15
23. Late Bids I-15
24. Withdrawal, and Modification of Bids I-15
25. Bid Opening I-16

E. Evaluation and Comparison of Bids I-17
26. Confidentiality I-17
27. Clarification of Bids I-17
28. Deviations, Reservations, and Omissions I-18
29. Determination of Responsiveness I-18
30. Nonconformities, Errors, and Omissions I-19
31. Qualification of the Bidder I-20
32. Correction of Arithmetical Errors I-20
33. Subcontractors I-21
34. Evaluation of Bids I-21
35. Comparison of Bids I-22
36. Employer's Right to Accept Any Bid, and to Reject Any or All Bids I-22

F. Award of Contract I-22
37. Award Criteria I-22
38. Letter of Intent to Award the Contract/ Notification of Award I-22
39. Performance Security I-23
40. Signing of Contract I-23
41. Complain and Review I-24

Section – II Bid Data Sheet II-1 to II-11
A. General II-1
B. Bidding Document II-2
C. Preparation of Bids II-2
D. Submission and Opening of Bids II-3
E. Evaluation and Comparison of Bids II-4
F. Special Instructions to Bidders for e-Bidding II-5

Section – III Evaluation and Qualification Criteria III-1 to III-12
1. Evaluation III-1
1.1 Adequacy of Technical Proposal III-1
1.2 Multiple Contracts III-1
1.3 Completion Time III-1
1.4 Alternative Technical Solutions III-1
1.5 Quantifiable Nonconformities, Errors and Omissions III-1

2. Qualification III-2
2.1 Power of Attorney III-2
2.2 Legal Status III-2
2.3 Eligibility III-3
2.4 Pending Litigation III-5

2.5	Financial Situation	III-5
2.6	Quality of Goods	III-6
2.7	Experience	III-8
2.8	Manufacturer's Experience	III-10
2.9	Miscellaneous	III-10
2.10	Personnel	III-11
2.11	Equipment	III-11

Section – IV Bidding Forms IV-1 to IV-21

Letter of Technical Bid IV-2
Letter of Price Bid IV-4
Bid Security IV-4
Manufacturer's Authorization IV-5
Technical Proposal Format IV-6
Personnel IV-7
Form PER-1: Proposed Personnel IV-7
Form PER-2: Resume of Proposed Personnel IV-8
Equipment IV-9
Bidder's Information and Qualification Format IV-11
Bidder's Qualification IV-12
Form ELI - 1: Bidder's Information Sheet IV-12
Form ELI - 2: JV Information Sheet IV-13
Form LIT - 1: Pending Litigation IV-14
Form FIN - 1: Financial Situation IV-15
Form FIN - 2: Average Annual Construction Turnover IV-16
Form FIN - 3: Financial Resources IV-17
Form FIN- 4: Current Contract Commitments / Works in Progress IV-18
Form EXP - 1: General Project Experience IV-19
Form EXP - 2(a): Specific Project Experience IV-20
Form EXP - 2(b): Specific Project Experience in Key Activities IV-21

SECTION - I

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 V (Works Requirements). The name, identification, and number of Contracts of the National Competitive Bidding (NCB) 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 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/Grant Agreement"), and will be subject in all respects to the terms and conditions of that Loan/Grant 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;

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 Procuring Entity may blacklist a Bidder for a period of one (1) to three (3) years for its conduct including on 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 to 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 proposal 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) willcancel 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 remedy the situation.
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 shall be as specified in the BDS. The qualification requirement of the parties to the JV shall be as specified in Section III 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 an eligible country, in accordance with Section V (Eligible Countries). 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 either individually or as a partner in a joint venture. 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. 4.5 Enterprises owned by Government 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 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, Nepal 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. 4.8 In case a prequalification process has been conducted prior to the bidding process, this bidding is open only to prequalified Bidders.
5. Eligible Materials, Equipment 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. 5.2 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 Documents	
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 I Instructions to Bidders (ITB) Section II Bid Data Sheet (BDS) Section III Evaluation and Qualification Criteria (EQC) Section IV Bidding Forms (BDF) Section V Eligible Countries PART II Requirements Section VI Works Requirements (WRQ) Section VII Bill of Quantities (BOQ) PART III Conditions of Contract and Contract Forms Section VIII General Conditions of Contract (GCC) Section IX Special Conditions of Contract (SCC) Section X 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 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 ITB 7.5. 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 advised 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 Non attendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.
8. Amendment of Bidding Document	8.1 At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Document by issuing agenda. 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) Bid Security in accordance with ITB 19; (c) alternative Bids, at Bidder's option and if permissible, in accordance with ITB 13; (d) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2; (e) documentary evidence in accordance with ITB 17, establishing the Bidder's qualifications to perform the contract; (f) Technical Proposal in accordance with ITB 16; (g) Bids submitted by a Joint Venture shall include a copy of the Joint Venture Agreement entered into by all partners. Alternatively, a Letter of Intent to execute a Joint Venture Agreement in the event of a successful Bid shall be signed by all partners and submitted with the Bid, together with a copy of the proposed agreement. The Joint Venture

	agreement, or letter of intent to enter into a Joint Venture including a draft agreement shall indicate at least the parts of the Works to be executed by the respective partners; and (h) Any other document required in the BDS. 11.3 The Price Bid shall comprise the following: (a) Letter of Price Bid; (b) completed Bill Of Quantities (BOQ), 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 Letter of Technical Bid and Price Bid, Schedules, and all documents listed under ITB 11, shall be prepared using the relevant forms in Section 4 (Bidding Forms), if so provided. 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.
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. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the Employer.

	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 V (Works Requirements). The method for their evaluation will be stipulated in Section III (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 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 VII (Bill Of Quantities). 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 The Bidder shall quote any discounts and the methodology for their application 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 14.4, 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 IV (Bidding Forms) and the Employer may require the Bidder to justify its proposed indices and weightings.

	14.7 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. Currency of Bid and Payment	15.1 The currency of the bid and payment shall be in Nepalese Rupees.
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 IV (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 III (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding information sheets included in Section IV (Bidding Forms).
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.

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 "A" class commercial bank 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 an "A" class commercial Bank in Nepal. 19.4 Any bid not accompanied by an enforceable and substantially compliant bid security 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 40.1and 41.1. 19.6 The bid security shall be forfeited if: GoN funded : (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 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 40.1; (ii) sign the Contract in accordance with ITB 41.1; or (iii) accept the correction of arithmetical errors pursuant to clause 33.1 ; DP funded : (a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letters of Technical Bid and Price Bid, except as provided in ITB 18.2; or (b) the successful Bidder fails to: (i) furnish a performance security in accordance with ITB 40.1; (ii) sign the Contract in accordance with ITB 41.1; or (iii) accept the correction of arithmetical errors pursuant to clause 33.1 ; 19.7 The Bid Security of a Joint Venture shall be in the name of the Joint Venture 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 set of the Technical Bid and one original of the Price Bid comprising the Bid as described in ITB 11 and clearly mark it "ORIGINAL – Technical Bid" and "ORIGINAL – PRICE BID." 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). 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 un amended 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 NO. TECHNICAL BID" and "COPY NO. PRICE BID". These envelopes containing the original and the copies shall then be enclosed in one single envelope. (b) Bidders submitting bids electronically shall follow the electronic bid submission procedures specified in the BDS. 21.2 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; and 21.3 The outer envelope and the inner envelope containing the 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. 21.4 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 21.5 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.
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 GoN Funded: (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. DP Funded: A Bidder may withdraw or modify its Bid – Technical or Price – after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 20.2, (except that withdrawal notices do not require copies). The corresponding modification of the Bid must accompany the respective written notice. All notices must be (i) prepared and submitted in accordance with ITB 20 and ITB 21 (except that withdrawal notices do not require copies), and in addition, the respective envelopes shall be clearly marked "WITHDRAWAL," and "MODIFICATION;" and (ii) received by the Employer prior to the deadline prescribed for submission of Bids, in accordance with ITB 22. (i) Bids submitted in hard copy (a) Bidder may submit modification or withdrawal prior to the deadline prescribed for submission of bids through e-bidding system by using the forms and instructions provided by the system 24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall not be opened. In case of hard copy submission, the Bid will be returned unopened to the Bidders. 24.3 The following provisions apply for withdrawal or modification of the Bids: GoN Funded: (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. DP Funded: No Bid may be withdrawn or modified in the interval between the deadline for submission of Bids and the expiration of the period of bid validity specified by the Bidder on the Letters of Technical Bid and Price Bid or any extension thereof. 24.4 Bidder may submit request for withdrawal or modification only one time except electronically submitted bid. 24.5 In case of hard copy, no bid may be withdrawn if the bid has already been modified. 24.6 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.
25. Bid Opening	25.1 The Employer shall open the Bids in public at the address, on the date and time **specified in the BDS** in the presence of Bidders` designated representatives 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- submitted technical bid only after bid opening date and time after login simultaneously by at least two members of the Bid Opening Committee. 25.3 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 at least 7 days 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 prices or 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 11.2 and ITB 11.3 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. Examination of Technical Bid	29.1 The Employer shall examine the Technical Bid to confirm that all documents and technical documentation requested in ITB 11.2 have been provided, and to determine the completeness of each document submitted. 29.2 The Employer shall confirm that the following documents and information have been provided in the Technical Bid. If any of these documents or information is missing, the offer shall be rejected. (a) Letter of Technical Bid; (b) written confirmation of authorization to commit the Bidder; (c) Bid Security; and

	(d) Technical Proposal in accordance with ITB 16
30. Determination of Responsiveness	30.1 The Employer's determination of a bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.2. 30.2 A substantially responsive 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. 30.3 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 V (Works Requirements) have been met without any material deviation, reservation or omission. 30.4 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. 30.5 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 27.1, the bid shall not be considered for further evaluation.
31.Nonconformities, Errors, and Omissions	31.1 Provided that a bid is substantially responsive, the Employer may waive any non-conformities, errors & omission in the bid that do not constitute a material deviation, reservation, or omission.

	31.2 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. 31.3 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 III (Evaluation and Qualification Criteria). 31.4 If the monetary value of such non-conformities is found to be more than fifteen percent of the Bid Price of the bidder pursuant to ITB 31.3, such bid shall be considered nonresponsive and shall not be involved in evaluation.
32. Qualification of the Bidder	32.1 The Employer shall determine to its satisfaction during the evaluation of Bids whether Biddersmeet the qualifying criteria specified in Section III (Evaluation and Qualification Criteria). 32.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17.1. 32.3 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..

33. Correction of Arithmetical Errors	33.1 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 the bid price in the Summary of Bill of Quantities and the bid amount in item (c) of the Letter of Bid, the bid price in the Summary of Bill of Quantities will prevail and the bid amount in item (c) of the Letter of Bid will be corrected. (d) 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), (b) and (c) above. 33.2 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 shall be forfeited.
34. Subcontractors	34.1 In case of Prequalification, the Bidder's Bid shall name the same subcontractor as submitted in the prequalification application and approved by the Employer. In case of Post-qualification, the Employer may permit subcontracting for certain specialized works as indicated in Section III When subcontracting is permitted by the Employer, the sub-contractor shall meet the qualifications criteria as indicated in section III. Sub-contractors' qualification and experience will not be considered for evaluation of the Bidder. The Bidder on its own (without taking into account the qualification and experience of

	the sub-contractor) should meet the qualification criteria. Bidders may propose subcontracting up to the percentage of total value of contracts or the volume of works as **specified in the BDS.**
35. Evaluation of Price Bids	35.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted. 35.2 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 33.1; (c) price adjustment due to discounts offered in accordance with ITB 14.4; (d) adjustment for nonconformities in accordance with ITB 31.3; (e) application of all the evaluation factors indicated in Section III (Evaluation and Qualification Criteria); 35.3 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. 35.4 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 III (Evaluation and Qualification Criteria). 35.5 If the bid for an Unit Rate Contract, which results in the lowest Evaluated Bid Price, is seriously unbalanced, front loaded or substantially below updated estimates 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. 35.6 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. Comparison of Bids	36.1	The Employer shall compare all substantially responsive bids in accordance with ITB 35.2 to determine the lowest evaluated bid.
37. Employer's Right to Accept Any Bid, and to Reject Any or All Bids	37.1	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		
38. Award Criteria	38.1	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.
39. Letter of Intent to Award the Contract/Notification of Award	39.1	The Employer shall notify the concerned Bidder whose bid has been selected in accordance with ITB 38.1 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. 39.2 If no bidder submits an application pursuant to ITB 42 within a period of seven days of the notice provided under ITB 39.1, the Employer shall, accept the bid selected in accordance with ITB 38.1 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. Performance Security	40.1 Within Fifteen (15) days of the receipt of Letter of Acceptance from the Employer, the successful Bidder shall furnish the performance security in accordance with the Conditions of Contract, as specified below from A class Commercial Bank using Sample Form for the Performance Security included in Section X (Contract Forms), or another form acceptable to the Employer. The performance security issued by any foreign Bank outside Nepal must be counter guaranteed by an "A" class commercial Bank 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 × Cost Estimate – Bid Price) × 0.5] + 5% of Bid Price.** The Bid Price and Cost Estimate shall be inclusive of Value Added Tax. 40.2 Failure of the successful Bidder to submit the above-mentioned Performance Security 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. The process shall be repeated according to ITB 39.
41. Signing of Contract	41.1 The Employer and the successful Bidder shall sign the Contract Agreement within the period as stated ITB 40.1. 41.2 At the same time, the Employer shall affix a public notice on the result of the award on its notice board and make arrangement for causing such notice to be affixed on the notice board also of the District Development Committee, District Administration Office and District Treasury and Controller Office. The Employer 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) the result of evaluation of bid; (ii) date of publication of notice inviting bids; (iii) name of newspaper; (iv) reference number of notice; (v) item of procurement; (vi) name and address of bidder making contract and (viii) contract price. 41.3 Within thirty (30) days from the date of issuance of notification pursuant to ITB 39.1 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. 41.4 If the bidder whose bid has been accepted fails to sign the contract as stated ITB 40.1, the Public Procurement Monitoring Office shall blacklist the bidder on recommendation of the Public Entity.
42. Complaint and Review	42.1 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 within Seven (7) days of providing the notice under ITB 39.1 by the Public Entity, for review of the proceedings stating the factual and legal grounds. 42.2 Late application filed after the deadline pursuant to ITB 42.1 shall not be processed. 42.3 The chief of Public Entity shall, within five (5) days after receiving the application, give its decision with reasons, in writing pursuant to ITB 42.1: (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 up to the value as stated in 42.4. 42.4 If the Bidder is not satisfied with the decision of the Public Entity in accordance with ITB 42.3, is not given within five (5) days of receipt of application pursuant to ITB 42.1, 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 of the chief of Public

	Entity and furnishing the relevant documents, provided that its Bid amount is more than Rupees Twenty Million (NRs. 20,000,000). The application may be sent by hand, by post, by courier, or by electronic media at the risk of the Bidder itself. 42.5 Late application filed after the deadline pursuant to ITB 42.4 shall not be processed. 42.6 Within three (3) days of the receipt of application from the Bidder, pursuant to ITB 42.4, the Review Committee shall notify the concerning Public Entity to furnish its procurement proceedings, pursuant to ITB 42.3. 42.7 Within three (3) days of receipt of the notification pursuant to ITB 42.6, the Public Entity shall furnish the copy of the related documents to the Review Committee. 42.8 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 42.4. 42.9 The Bidder, filing application pursuant to ITB 42.4, shall have to furnish a cash amount or Bank guarantee from "A" class commercial bank equivalent to zero point one five percent (0.15%) of its quoted Bid amount with the validity period of at least ninety (90) days from the date of the filing of application pursuant to ITB 42.4. 42.10 If the claim made by the Bidder pursuant to ITB 42.4 is justified, the Review Committee shall have to return the security deposit to the applicant, pursuant to ITB 42.9, within seven (7) days of decision made.

SECTION - II
Bid Data Sheet

A. General	
ITB 1.1	The number of the Invitation for Bids is: **BRO/2074/075-12(RE)**
ITB 1.1	The Employer is: **Nepal Electricity Authority** **Distribution and Consumer Services Directorate** **Butwal Regional Office** **Kalikanagr , Butwal.**
ITB 1.1	The number and identification of lots comprising this bidding process is: **N/A** Following is the addition of the new definitions: (a) "Bidder" shall mean a legally registered entity submitting the Bid proposal. The entity may be a supplier or manufacturer of the tendered Goods or contractor or any combination of them in the form of a Joint Venture as specified in Qualification Requirements. (b) "Joint Venture" shall mean a legally enforceable association constituted by legally registered entities with the purpose of committing the obligations required by the Bid. (c) "Goods" shall mean equipment, plant, goods, materials, etc. to be supplied and installed for the completion of the work as particularly described in the specifications. The name of project is : **Supply, delivery, installation/erection, testing and commissioning of Hadhahade, Pipaldhara, Marbhung, Chhaphile, Jaisithok and other VDC Electrification, Gulmi .**
ITB 2.1	The DP is: **Not Applicable** The implementing agency is: **Nepal Electricity Authority (NEA)** Source of Fund: **GoN Funded .**
ITB 4.1 (a)	Maximum number of partner in a joint venture shall be : 3 (three)

	The qualification requirement of the parties to the JV shall be : Lead partner – at least 40% Other partners – at least 25% Overall (Lead partner plus other partners) – 100 %
B. Bidding Document	
ITB 7.1	For clarification purposes only, the Employer's address is: Attention: **Project Manager** Address: **Nepal Electricity Authority** **Distribution and Consumer Services Directorate** **Butwal Regional Office** **Kalikanagr, Butwal.** Telephone: **071-438584,437735** Facsimile number: **+977-71-437009** Electronic mail address: **neabutwalro@gmail.com**
ITB 7.4	A Pre-Bid meeting **"shall not"** be held. A site visit " **shall not"** be organized by the Employer.
ITB 7.5	Time for Request: Requests for clarification should be received by the Employer no later than **10 days** prior to the deadline for submission of bids.
C. Preparation of Bids	
ITB 10.1	The language of the bid is: **English/Nepali**
ITB 11.2 (h)	The Bidder shall submit with its Technical Bid the following additional documents: As specified in **Evaluation & Qualification Criteria**
ITB 11.3 (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: **N/A**
ITB 11.3 (d)	The Bidder shall submit with its bid the following additional documents: **None**

ITB 13.1	Alternative bids "**shall not**" be permitted.
ITB 13.2	Alternative times for completion "**shall not** " be permitted.
ITB 13.4	Alternative technical solutions shall be permitted for the following parts of the Works: **None**
ITB 14.6	The prices quoted by the Bidder **shall not** be subject to adjustment during the performance of the Contract.
ITB 18.1	The bid validity period shall be: **90 days.**
ITB 19.1	The Bidder shall furnish a bid security, from "A" class commercial bank with a minimum of **NRs. 18,00,000.00**, which shall be valid for 30 days beyond the validity period of the bid.
ITB 19.2 (b)	Account Name:**Nepal Electricity Authority** Bank Name: **Jyoti Bikas Bank Ltd., Butwal.** Bank Address: **Butwal Branch** Account Number: **00200200100008737000001**
ITB 20.1	In addition to the original of the bid, the number of copies are: **Not Applicable**
ITB 20.2	The written confirmation of authorization to sign on behalf of the Bidder shall indicate: (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; and (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.
D. Submission and Opening of Bids	

ITB 21.1	Bidders "**shall**" have the option of submitting their bids electronically.
ITB 22.1	For bid submission purposes only, the Employer's address is : **Nepal Electricity Authority** **Distribution and Consumer Services Directorate** **Butwal Regional Office** **Kalikanagar, Butwal.** Telephone: **+977-71- 438584,437735** Facsimile number: **+977-71- 437009** Electronic mail address: **neabutwalro@gmail.com** The deadline for bid submission is : Date : **20 Chaitra, 2074** Time : **On or Before 12:00noon.**
ITB 25.1	The bid opening shall take place at : **Nepal Electricity Authority** **Distribution and Consumer Services Directorate** **Butwal Regional Office** **Kalikanagar, Butwal.** Telephone: **+977-71- 438584,437735** Facsimile number: **+977-71- 437009** Electronic mail address: **neabutwalro@gmail.com** Date : **20 Chaitra, 2074** Time : **On or After 2:00 PM**
E. Evaluation and Comparison of Bids	
ITB 34.1	Contractor's propose subcontracting: Maximum percentage of subcontracting permitted is : *25% of the total contract amount.* Sub-contractors' qualification and experience will not be considered for evaluation of the Bidder. The Bidder on its own (without taking into account the qualification and experience of the sub-contractor) should meet the qualification criteria.
ITB 35.5	The amount of the performance security shall be increased by **Eight (8) percent** of the quoted bid price.

F. Special Instructions to Bidders for e-Bidding

A) Bid preparation:

A Bidder who wish to submit the bid electronically may purchase the Bid Document directly from the Employer office or may download the bid document from the website and deposit the equivalent amount in the Revenue account of the employer as specified in the notice or/and Bid Document.

B) Description of bid submission procedure through electronically (e-submission) only :

i. Interested bidders shall, either purchase the Bid Document directly from the Employer office or may download the bid document from the website and deposit the equivalent amount in the Revenue account of the employer as specified in the notice or/and Bid Document.

ii. The Bidder shall fill the following documents and forms (in hard copy of issued bid documents), signed by the authorized representative with seal of the company
   a) Bill of Quantity (BOQ) with rate, amount
   b) Forms of Bid, Qualification Information

iii. The Bidder shall then scan the completed original documents, forms in PDF files with appropriate filename shown in the table below.

S. No.	Document Name	Mandatory	Filename	Remarks
Single Envelop Document set (As Guided by PPMO)				
1	Letter of Bid	1	Letter bid -1	
2	Bid Security (Bank Guarantee)	1	Bid security-2	
3	Company registration,	1	Company reg-3	
4	VAT registration,	1	VAT reg-4	Mandatory for National Firms
5	Tax clearances certificate,	1	Tax-5	Mandatory for National Firms
6	Power of Attorney of Bid signatory	1	Power of att-6	
7	Business Registration (License) Certificate	1	Licence-7	
8	Bank Voucher for Cost of Bid Doc	1	Voucher-8	
9	Joint Venture Agreement	1	JV-Doc-9	Mandatory for JV Firms
10	Qualification Information	1	Qualification -10	
11	Applicable Price Adjustment Table	1	Price adjust-11	Mandatory if Applicable

12	Complete BOQ	1	BOQ-12	
Two Envelop Document set (As Guided by PPMO)				
1	Letter of Technical Bid	1	Letter tech bid -1	Technical Document
2	Bid Security (Bank Guarantee)	1	Bid security-2	Technical Document
3	Company registration,	1	Company reg-3	Technical Document
4	VAT registration,	1	VAT reg-4	Technical Document [Mandatory for National Firms]
5	Tax clearances certificate,	1	Tax-5	Technical Document [Mandatory for National Firms]
6	Power of Attorney of Bid signatory	1	Power of att-6	Technical Document
7	Business Registration (License) Certificate	1	Licence-7	Technical Document
8	Bank Voucher for Cost of Bid Doc	1	Voucher-8	Technical Document
9	Joint Venture Agreement	1	JV-Doc-9	Technical Document [Mandatory for JV Firms]
10	Qualification Information	1	Qualification -10	Technical Document
11	Letter of Price Bid	1	Letter Price bid -1	Financial Document
12	Applicable Price Adjustment Table	1	Price adjust-11	Financial Document [Mandatory if Applicable]
13	Complete BOQ	1	BOQ-12	Financial Document

Note: ***Mandatory*** *means the mentioned files shall be in e-submission and non submission of such file shall be considered as non-responsive.*

iv. For e-submission purpose the Bidder shall, at first, register in the e-procurement section of NEA Web site **http://www.nea.org.np**

v. After preparing all the required bidding documents in PDF scan files as specified in (ii) and

vi. The Bidder shall upload the PDF bid files and submit his complete bid online through e-procurement section of NEA website **http://www.nea.org.np** within the specified date and time.

C) The Employers address for the purpose of e-submission of bid:

i. The Employers address for the purpose of electronic Bid submission is e-procurement section of http://www.nea.org.np.

ii. In case of e-submission of bid, the bidder shall submit his bid electronically in PDF files in the manner as specified above and additional submission of hard copy of "Original plus one copy of bid" is not mandatory.

iii. In case both the electronic bid and original bid in hard copy are submitted to the Employer within the specified time period, the Bidder's electronic bid and original bid in hard copy will be accepted for evaluation provided the Bid price in Bill of Quantity Sheet is same. If there is any discrepancy in Bid price in Bill of Quantity between the electronic and original bid in hard copy it will be treated as two separate bids from one Bidder and hence, both the electronic bid and original bid in hard copy shall be disqualified, as per ITB Clause.

iv. However, for electronically submitted bid in PDF files, the bidder shall be required to submit documents/clarifications as specified in ITB Clause.

D) The deadline for e-submission of bids shall be :

i. Bidders shall be also explained about the details of e-submission procedures in the pre-bid meeting.

ii. The e-procurement system will accept the e-submission of bid during office hours from the date after publishing the notice and will automatically not allow the e-submission of bid after the deadline for submission of bid, as specified above.

iii. The standard time for e-submission is Nepalese standard time as set out in the server of NEA.

iv. In case of e-submission of bid, the Bidder shall submit his bid electronically in PDF files in the manner as specified in ITB Clause only, and submission of

"original plus one copy" shall not be required before deadline for submission time as per ITB Clause.

E) Provision for Substitution or Modification or Withdrawal of Bid :

When a bidder submits his bid in hard copy the e-procurement section **does not allow** the Bidder to submit his Substitution, or Modification, or Withdrawal through e-procurement section of NEA's Web site

In case of e-submitted bid;

i. Bidders may submit his Substitution or Modification or Withdrawal either in hard copy or through e-submission.

ii. For Substitution of Bid the Bidder shall follow similar steps as specified in ITB Clause with a Substitution letter in PDF file.

iii. For Modification or Withdrawal of bid the Bidder is required to submit PDF scan copy of their Modification or Withdrawal letter and a written Power of Attorney of the signatory for Modification/ Withdrawal, duly signed by Authorized Representative/s of the Firm / all authorized Joint Venture partners.

Bid opening for e-submitted bid;

i. Electronically submitted bid shall be opened first at the same time and date as specified in the ITB and IFB notice.

ii. The e-procurement system allows the Employer to download and open the e-submitted bid files from bidders only after the time for opening the bids.

iii. The e-submitted bids must be readable through open standards interfaces. Unreadable and or partially submitted bid files (not complying the ITB Clauses) shall be considered incomplete and rejected for further bid evaluation.

iv. After opening of e-submitted bids files, all files shall be printed and recorded at the time of bid opening

In case of "WITHDRAWAL" or "MODIFICATION" or "SUBSTITUTION" by the Bidder through e-submission, the e-submitted PDF files under "WITHDRAWAL" or "MODIFICATION" or "SUBSTITUTION" shall be opened and read out first. Bids for which acceptable notice of "WITHDRAWAL" or "SUBSTITUTION" has been submitted pursuant to ITB Clause shall not be

opened.

Clarification of Bid

In case of e-submission of bid, the Bidder shall be required to submit the original completed Bid consisting of Forms of Bid, Qualification Information, Special Conditions of Contract, Bill of Quantities, Supplementary Information and other clarifications for verification purpose upon notification to do so from the Employer.

Examination of e-submitted Bids and Determination of Responsiveness

For an e-submitted bid to be substantially responsive the requirement as specified in the ITB Clauses shall be fulfilled.

F) Evaluation and Comparison of e-submitted Bids:

i. In case of e-submitted bids, the Employer evaluates the bid based on the information as per electronically submitted bid files. For clarification/ verification purpose, the Employer may request the Bidder to submit documents/ clarifications as specified in ITB Clause.

ii. In case, the Bidder could not substantiate or provide evidence to prove the information provided in e-submitted bid through documents/ clarifications as per ITB Clause, the bid shall not be considered for further evaluation and respective ITB Clause for forfeiture of bid security shall be applicable.

G) Steps to be followed by a Bidder to submit the electronic bid submission

i. **Prepare the paper bid document**

- Either purchase the Bid Document directly from the Employer office or may download the bid document from the website and deposit the equivalent amount in the Revenue account of the employer as specified in the notice or/and Bid Document.

- Fill the rates and amount in BOQ,
- Fill the Bid Form,
- Prepare the necessary copy of Company registration, VAT/PAN registration , Tax clearance certificate,
- Prepare the necessary specific papers like Power of Attorney for bid signatory, Joint Venture agreement, if bidding in JV,
- Prepare summary of qualification information sheet (Financial turnover, Experience, Manpower, Equipment, Credit line, Litigation etc) in the specified format,
- Prepare the bid guarantee letter for the specified bid security amount and in the specified format,

ii. **Prepare the Electronic bid files in pdf format**

- Once prepared the above paper documents the bidder shall prepare the electronic bid files in pdf format as follows;
- Scan the above documents in pdf format, give the specific file name for each document,
- Prepare all scanned bid files in pdf format and save them in a separate folder in own computer to ease bid uploading process,

iii. **Electronic bid submission**

- Once the electronic bid files are ready the Bidder shall connect to internet,
- Open the NEAs website www.nea.org.np and open E-procurement section,
- Register in the Bidders name and get User name and Password for Login,
- Confirm the registration by clicking the specified link in auto generated e-mail from NEAs web site,
- After confirmation for bidders registration click Bidder, fill User name, Password and Login,
- Choose and click the specific tender notice for which the electronic bid files has been prepared,
- Click the Bid now button to submit the electronic bid files,

- Upload each specified electronic bid files by clicking the Upload button and select the respective bid files by Browsing,
- Once all the electronic bid files are uploaded, click the Submit the Bid button for final e-submission of electronic Bid,
- Once the e-submission is successfully completed the Bidder shall receive a auto generated confirmation e-mail from the NEAs website,
- Bidder to keep the conventional paper bid document , qualification information, and other related documents safe as the Buyer may seek the supporting bid documents and clarifications, as necessary during bid evaluation process.
- The Bidder shall submit the necessary supporting documents and clarifications (conventional bid document)

`SECTION - III

Evaluation and Qualification Criteria

This Section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders by post-qualification exercise. **GoN**/DP requires bidders to be qualified by meeting predefined, precise minimum requirements. The method sets pass-fail criteria, which, if not met by the bidder, results in disqualification. In accordance with ITB 32 and ITB 35, no other methods, criteria and factors shall be used. The Bidder shall provide all the information requested in the forms included in Section IV (Bidding Forms).

1. Evaluation

In addition to the criteria listed in ITB 35.2 (a)-(e) 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 VI (Works Requirements).

1.2 Multiple Contracts

Pursuant to Sub-Clause 35.4 of the Instructions to Bidders, if Works are grouped in multiple contracts, evaluation will be as follows:

Works are grouped in multiple contracts and pursuant to Sub-Clause 35.4 of the Instructions to Bidders, the Employer will evaluate and compare Bids on the basis of a contract, or a combination of contracts, or as a total of contracts in order to arrive at the least cost combination for the Employer by taking into account discounts offered by Bidders in case of award of multiple contracts.

If a bidder submits several successful (lowest evaluated substantially responsive) bids, the evaluation will also include an assessment of the Bidder's capacity to meet the aggregated requirements regarding:

a. Specific Construction Experience
b. Average Annual Construction Turnover
c. Financial Resources, Equipment to be allocated, and
d. Personnel to be fielded.

1.3 Completion Time

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

N/A

1.4 Alternative Technical Solutions (Not Applicable)

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

N/A

1.5 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.

2. Qualification

Failure to fulfill any of the requirements specified in Qualification Requirements given below from 2.1 to 2.11 shall result in disqualification of the Bid.

Criteria		Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
2.1 Power of Attorney					
The Bid shall include a notarized power of attorney authorizing the signatory of the bid to commit on behalf of the Bidder.	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment
2.2 Legal Status					
i) For the Bidder which is not a Joint-Venture: The Bidder shall be a supplier or manufacturer of the tendered Goods or contractor legally registered for at least five (5) years. A notarized copy of legal registration certificate shall be submitted along with the Bid.	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment
ii) For the JV Bidder: (a) Original of joint venture agreement legally binding on all JV partners shall be included in the Bid. The joint venture agreement shall bear the seal of the entity and signatures of personnel authorized by the respective entities forming the joint venture. All such authorization	must meet requirement	not applicable	must meet requirement	not applicable	

documents shall also be included in the Bid. These Authorization document shall be on the original letterhead of the respective entity with stamp/seal of the entity. (b) The number of joint venture partners shall not exceed three (3). (c) The Partners of the JV shall be a manufacturer or contractor legally registered for at least five (5) years. (d) Notarized copies of legal registration certificates for each JV partners shall be submitted along with the Bid.					

2.3 Eligibility

Criteria		Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
2.3.1 Nationality					
Nationality in accordance with ITB 4.2	must meet requirement	existing or intended JV must meet requirement	must meet requirement	not applicable	Letter of Technical Bid Forms ELI –1; ELI –2 with attachments
2.3.2 Conflict of Interest					
No conflicts of interest in accordance with ITB Sub-Clause	must meet requirement	existing or intended JV must meet	must meet requirement	not applicable	Letter of Technical Bid

4.3.		requirement			
2.3.3 Government/DP Eligibility					
Not having been declared ineligible by government/DP, as described in ITB Sub-Clause 4.4.	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Technical Bid
2.3.4 Government-owned Entity					
Bidder required to meet conditions of ITB Sub-Clause 4.5.	must meet requirement	existing or intended JV must meet requirement	must meet requirement	not applicable	Forms ELI – 1, ELI - 2, with attachments
2.3.5 UN Eligibility					
Not having been declared ineligible based on a United Nations resolution or Employer's country law, as described in ITB Sub-Clause 4.8.	must meet requirement	existing or intended JV must meet requirement	must meet requirement	not applicable	Letter of Technical Bid
2.3.6 Other Eligibility					
Firm Registration Certificate	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment
Business Registration Certificate	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment
VAT and PAN Registration certificate ***(only for domestic bidders)***	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment
Tax Clearance Certificate/Tax return submission evidence for the **F/Y2073/074*.(Only for domestic bidders)***	must meet requirement	not applicable	must meet requirement	not applicable	Document attachment

2.4 Pending Litigation

Criteria		Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
2.4.1 Pending Litigation					
All pending litigation shall be treated as resolved against the Bidder and so shall in total not represent more than 50 percent of the Bidder'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

2.5 Financial Situation

Criteria		Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
2.5.1 Historical Financial Performance					
Submission of audited balance sheets and income statements, for the last **3(Three)** years to demonstrate the current soundness of the Bidder's financial position. As a minimum, a Bidder's net worth	must meet requirement	not applicable	must meet requirement	Not applicable	Form FIN - 1 with attachments

calculated as the difference between total assets and total liabilities should be positive.					
2.5.2 Average Annual Construction Turnover					
Minimum average annual construction turnover of **NRs.4,34,00,000.00** calculated as total certified payments received for construction contracts in progress or completed, over the best three years with in the last 10 years.	must meet requirement	must meet requirement	must meet 25 % of the requirement	must meet 40 % of the requirement	Form FIN -2
2.5.3 Financial Resources					
Using Forms FIN - 3 and FIN - 4 in Section IV (Bidding Forms) the Bidder must demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet : ❑ The following cash-flow requirement, at least **NRs. 5,17,43,836.86**	must meet requirement	must meet requirement	must meet 25 % of the requirement	must meet 40 % of the requirement	Form FIN - 3 and Form FIN - 4

2.6 Quality of Goods

i. In case the Bidder is not the manufacturer of Goods offered, the Bidder shall submit	must meet requirement	must meet requirement	Not Applicable	Not Applicable	Letter of manufacturer's authorization

manufacturer's certificate authorizing the Bidder to supply the manufacturers' Goods. This certificate shall bear details of the Goods that the manufacturer will be supplying under the authorization. The authorization shall be on the manufacturer's original letter head with seal/stamp of the manufacturer.					
ii. The manufacturer of Goods to be supplied under this Bid shall hold valid quality ISO certificate as required by the specifications and a copy of ISO certificate shall be included in the Bid.	must meet requirement	must meet requirement	Not Applicable	Not Applicable	Copy of ISO Certificate
iii. Type test certificate, if applicable, shall be included in the Bid and shall bear a date that is not earlier than five (5) years from the last date of Bid submission unless otherwise stated in the Technical specifications. The type test certificate shall have been issued by a reputed independent laboratory accredited by International Laboratory Accreditation Corporation (ILAC) or International Accreditation Forum (IAF) or other reputed accreditation agencies. In case the Type test	must meet requirement	must meet requirement	Not Applicable	Not Applicable	Copy of Type test certificate as per requirement

certificate is not as per the requirement, the bidder shall, upon award of the Contract, undertake to carry out the required Type tests from an independent laboratory qualified as above or in the laboratory owned or nominated by the Client / Employer before delivery of the corresponding equipment at no extra cost to the Client / Employer.					

2.7 Experience

Criteria		Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
2.7.1 General Construction Experience					
Experience under construction contracts in the role of contractor, subcontractor, or management contractor for at least the last **5 (five) years** prior to the applications submission deadline.	must meet requirement	not applicable	must meet requirement	not applicable	Form EXP - 1
2.7.2 Specific Construction Experience					
(a) Contracts of Similar Size and Nature					
Participation as Prime contractor, management contractor, or subcontractor, in at least **one (1)** contract within the last ten (10) years, each with a value of at least **NRs. 5,20,00,000.00** that have been successfully or are substantially completed and	must meet requirement	must meet requirement	not applicable	not applicable	Form EXP - 1

that are similar to the proposed works. The similarity shall be based on the physical size, complexity, methods, technology or other characteristics as described in Section VI, Works Requirements. Only the net amount worked out after deducting the amount for VAT shall be computed and such amount shall be adjusted to the present value by applying wholesale price index of Nepal Rastra Bank.					
(b)Construction Experience in Key Activities					
For the above or other contracts executed during the period stipulated in 2.7.2(a) above, a minimum construction experience in the following key activities : a) Must have executed construction, Installation and commissioning of at least one contract of similar size and nature or number of contract of similar nature whose aggregate size is not less than the size of this bid. b) To substantiate the above qualification, the bidder must submit certificate from clients (end-user certificates) for all number of projects specified as above.	must meet all requirement	must meet all requirements	not applicable	not applicable	Form EXP - 2(b)

2.8 Manufacturer's Experience

Manufacturers for the following major items of supply or services must meet the following minimum criteria, herein listed for that item:

Item No.	Description of Item	Minimum Criteria to be met
1.	Pole, ACSR Conductor, Insulator & Hardware and Distribution Transformer	i) Must have manufacturing experience of at least 5 (Five) years. ii) The Bidder shall submit at least two numbers of end user certificate showing that the Bidder or manufacturer has successfully completed the supply of major items like Pole, ACSR Conductor, Insulator and hardware and Distribution Transformer at least twice the Bid Quantity of offered items 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 for each item offered shall have been in operation satisfactorily to the end user for at least one (1) year. The end user certificates shall be on the letterhead of the end user with valid address for correspondence and signed by or on behalf of the end user. iii) Must submit the type test report carried out by independent testing laboratory for the offered item.

2.9 Personnel

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

No.	Position	Academic Qualification *[When position demands]*	Total Work Experience [Years]	Experience in Similar Works [years]
1.	Project Manager	Bachelor Degree	5	3
2.	Electrical engineer	Bachelor in Electrical Engineering	3	1
3.	Electrical Supervisor	Diploma in Electrical Engineering	5	3

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 IV (Bidding Forms).

2.10 Equipment

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

No.	Equipment Type and Characteristics	Min. Requirement
1.	Survey equipment (Theodolite or Total station)	1 set
2.	Draw Vice/ Ratchet Puller	4 set
3.	5,000 volt Digital Megger	2 set
4.	Digital Multi-meters	2 set
5.	Digital Tongue Tester	2 set
6.	Crimping Tools	4 set
7.	Wire Cutter	4 set
8.	Rollers, Ropes	1 Lot
9.	Safety equipment (Safety Belt, Helmet, Gloves, Safety Boots)	As required
10.	Ladders	As required

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.

In case of Equipment to be leased/hired the same procedures as mentioned above shall apply.

The Bidder shall provide further details of proposed items of equipment using the relevant Form in Section IV (Bidding Forms)

2.11 Sub Contractors

The experience and financial capacity of the sub-contractors shall not be added to those of the Bidder for purposes of qualification of the Bidder.

The sub-contractors proposed shall be fully qualified for their work proposed, and meet the following

criteria:

2.7 (a) Nature of Works that can be sub contracted:

(i) ……..

(ii) ……..

Note: Employer should specify the nature of work, if sub-contracting is permitted.

2.7 (b) Qualification Criteria

The proposed sub-contractor shall meet the following requirements:

1) Completion of 80% of the quantity of the work being sub contracted

2) Financial Resources**:** The sub contract must demonstrate that it has the financial resources to meet its current contract commitment plus three months' requirements for the sub contracted work.

SECTION - IV

Bidding Forms

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

Letter of Technical Bid

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: ……..

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) Clause 8;

(b) We offer to execute in conformity with the Bidding Documents the following Works:

(c) Our Bid consisting of the Technical and the Price Bid shall be valid for a period of ***[insert validity period as specified in ITB 18.1of 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) Our firm, including any subcontractors or suppliers for any part of the Contract, have nationalities from eligible countries in accordance with ITB 4.2.

(e) We are not participating, as a Bidder or as a subcontractor, in more than one Bid in this bidding process in accordance with ITB 4.39(e), other than alternative offers submitted in accordance with ITB 13;

(f) Our firm, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the contract, has not been declared ineligible, under the Employer's country laws or official regulations or by an act of compliance with a decision of the United Nations Security Council;

(g) We are not a government owned entity/We are a government owned entity but meet the requirements of ITB 4.5;[1]

(h) 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.

(i) We declare that we are solely responsible for the authenticity of the documents submitted by us.

(j) We agree to permit the 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 the Employer.

(k) If our Bid is accepted, we commit to mobilizing key equipment and personnel in accordance with the requirements set forth in Section III (Evaluation and Qualification Criteria) and our technical proposal, or as otherwise agreed with the Employer.

Name: .....

In the capacity of .....

Signed ……...

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

Date ……....

Letter of Price Bid

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: ……

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) Clause 8;

(b) We offer to execute in conformity with the Bidding Documents the following Works:

(c) The total price of our Bid, excluding any discounts offered in item (d) below is: NRs. ……..; or when left blank is the Bid Price indicated in the Bill of Quantities[1].

(d) The discounts offered and the methodology for their application are:

(e) Our bid shall be valid for a period of ***[insert validity period as specified in ITB 18.1]*** 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;

(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:[2]

[1] Absence of the total price in the Letter of Price Bid or in the Bill of Quantities shall result in rejection of the Bid.

[2] If none has been paid or is to be paid, indicate "None".

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; and

(j) We declare that we are solely responsible for the authenticity of the documents submitted by us.

(k) We agree to permit the 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 the Employer.

Name: .....

In the capacity of .....

Signed ……...

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

Date ……....

Table of Price Adjustment Data (N/A)

[To be used if Price Adjustment is applicable as per GCC 53.1]

Code	Index Description	Source of Index*	Base Value and Date	Employer's Proposed Weighting Range (coefficient)	Bidder's Proposed Weighting (coefficient)**
1	2	3	4	5	6
	Non - Adjustable (A)			0.15	0.15
	Labor (b)				
	Materials (c)				
	Equipment usage (d)				
		Total			1.00

Table of Price Adjustment Data (N/A)

[To be used if Price Adjustment is applicable as per GCC 53.6]

Code	Construction Material*	Unit	Base Price (NRs/Unit) (Ex-factory)	Source (Factory)**
1	**2**	**3**	**4**	**5**

Bid Security
Bank Guarantee

Bank's Name, and Address of Issuing Branch or Office
(On Letter head of the 'A' class Commercial Bank)

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 ofContract . …… 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 27.1 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, notice of which

extension(s) to the Bank is hereby waived. Any demand in respect of this guarantee should reach the Bank not letter 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).

Manufacturer's Authorization Letter

[This letter of authorization should be on the letterhead of the manufacturer and should be signed by the person with the proper authority to sign documents that are binding on the manufacturer]

Date: _____

IFB No.: _____

To:_____

WHEREAS_____ who are official manufacturers of _____ having factories at _____ do hereby authorize _____ exclusively to submit a Bid in relation to the Invitation for Bids indicated above, the purpose of which is exclusively to provide the following Goods, manufactured by us _____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 in reply to this Invitation for Bids.

Name _____

In the capacity of: _____

Signed _____

Duly authorized to sign the Authorization for and on behalf of _____

Date _____

Technical Proposal Format

Personnel

Equipment

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Others

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.					
3.					
4.					
5.					

* As listed in Section III (Evaluation and Qualification Criteria).

Form PER - 2: Resume of Proposed Personnel

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

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

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

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.

(i) 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.				
3.				
4.				
5.				

(ii) 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.				
3.				
4.				
5.				

Type of Equipment*		
Equipment Information	**Name of manufacturer**	**Model and power rating**
	Capacity*	**Year of manufacture**
Current Status	**Current location**	
	Details of current commitments	
Source	**Indicate source of the equipment** **☐ Owned ☐ Rented ☐ Leased ☐ Specially manufactured**	

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

Owner	**Name of owner**	
	Address of owner	
	Telephone	**Contact name and title**
	Fax	**email**
Agreements	**Details of rental / lease / manufacture agreements specific to the project**	

The Bidder shall be solely responsible for the data provided. However, this shall not limit the right of Employer to verify the authenticity of submitted information.

Bidder's Information and Qualification Format

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Others

Bidder's Qualification

To establish its qualifications to perform the contract in accordance with Section III (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 JV, legal name of each partner	
Bidder's country of constitution	
Bidder's year of constitution	
Bidder's legal address in country of constitution	
Bidder's authorized representative (name, address, telephone numbers, fax numbers, e-mail address)	
Attached are copies of the following original documents.	
1. In case of single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and 4.2. 2. Authorization to represent the firm or JV named in above, in accordance with ITB 20.2. 3. In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1. 4. In case of a government-owned entity, any additional documents not covered under 1 above required to comply with ITB 4.5.	

Form ELI - 2: JV Information Sheet

Each member of a JV must fill in this form

JV / Specialist Subcontractor Information	
Bidder's legal name	
JV Partner's or Subcontractor's legal name	
JV Partner's or Subcontractor's country of constitution	
JV Partner's or Subcontractor's year of constitution	
JV Partner's or Subcontractor's legal address in country of constitution	
JV Partner's or Subcontractor's authorized representative information (name, address, telephone numbers, fax numbers, e-mail address)	
Attached are copies of the following original documents.	
1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and 4.2. 2. Authorization to represent the firm named above, in accordance with ITB 20.2. 3. In the case of government-owned entity, documents establishing legal and financial	

autonomy and compliance with commercial law, in accordance with ITB 4.5.

Form LIT - 1: Pending Litigation

Each member of a JV must fill in this form

Pending Litigation			
☐ No pending litigation in accordance with Criteria 2.4.1 of Section III (Evaluation and Qualification Criteria) ☐ Pending litigation in accordance with Criteria 2.4.1 of Section III (Evaluation and Qualification Criteria)			
Year	**Matter in Dispute**	**Value of Pending Claim in NRS**	**Value of Pending Claim as a Percentage on Net Worth**

Form FIN - 1: Financial Situation

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

Financial Data for Previous 3 Years [in NRS]		
Year 1 :	**Year 2 :**	**Year 3 :**

Information from Balance Sheet

Total Assets			
Total Liabilities			
Net Worth			
Current Assets			
Current Liabilities			

Information from Income Statement

Total Revenues			
Profit Before Tax			
Profit After Tax			

- Attached are copies of financial statements (balance sheets including all related notes, and income statements) for the last three or above years, as indicated above, complying with the following conditions.
- All such documents reflect the financial situation of the Bidder or partner to a JV, and not sister or parent companies.
- Historic financial statements must be audited by a certified auditor.
- 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:

In case of e-submission the attachments should not be uploaded but shall be submitted on notification by the Employer as per ITB 27.1

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 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 to NRs at the end of the period reported.

Annual Turnover Data for the Last 3Years	
Year	**Amount Currency**

- **Average Annual Turnover**

Form FIN - 3: Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as indicated in Section III (Evaluation and Qualification Criteria).

Financial Resources		
No.	**Source of financing**	**Amount (in NRS)**
1		
2		
3		

Note :

The letter from the Bank must be unconditional.

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									
No.	**Name of Contract**	**Name of the Contractor/s**	**Employer's Contact Address, Tel, Fax**	**Contract Amount**	**Contract Date**	**Contract Duration**	**Value of outstanding works [NRS]**	**Estimated Completion Date**	**Average Monthly Invoicing [NRS/month]**
1									
2									
3									
4									
5									
6									

Form EXP - 1: General Project Experience

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

General Construction Experience				
Starting Month Year	**Ending Month Year**	**Year**	**Contract Identification and Name and Address of Employer Brief Description of the Works Executed by the Bidder**	**Role of Bidder**

Form EXP - 2(a): Specific Project Experience

Fill up one (1) form per contract.

Contract of Similar Size and Nature			
Contract No…… of…..	**Contract Identification**		
Award Date		**Completion Date**	
Role in Contract	☐ **Contractor**	☐ **Management Contractor**	☐ **Subcontractor**
Total Contract Amount	☐ **NRS ……..**		
If Partner in a JV or subcontractor, specify participation of total contract amount	**Percent of Total**	**Amount**	
Employer's Name **Address** **Telephone/Fax Number** **E-mail**			
Description of the similarity in accordance with Criteria 2.7.2 (a) of Section III			
Note : ***The Employer should insert here contract size, complexity, methods, technology, or other characteristics as described in Section V (Work Requirements) against which the bidder demonstrates similarity in the box on the right-hand-side.***			

Form EXP - 2(b): Specific Project Experience in Key Activities

Fill up one (1) form per contract.

Contract of Similar Size and Nature			
Contract No…… of……..	**Contract Identification**		
Award Date		**Completion Date**	
Role in Contract	☐ **Contractor**	☐ **Management Contractor**	☐ **Subcontractor**
Total Contract Amount	☐ **NRS ……..**		
If Partner in a JV or subcontractor, specify participation of total contract amount	**Percent of Total**	**Amount**	
Employer's Name **Address** **Telephone/Fax** **Number** **E-mail**			
Description of the similarity in accordance with Criteria 2.7.2 (a) of Section III			
Note : *The Employer should insert here production rate(s) for the key activity (activities) subject contract against which the bidder demonstrates in the box on the right-hand-side production rates achieved by him on previous contracts.*			

SECTION - V

Eligible Countries

For GON Funded:

For the purpose of ITB 4.2: "**Nepal**";

Part - II

REQUIREMENTS

Table of Clauses

Section – V	Works Requirements	V-1 to V-194
	Scope of Work	V-2
	Technical Specification (Electrical Equipment)	V-17
	Construction Standard	V-87
	Technical Data Sheet	V-106
	Drawings	V-137
Section –VI	Bill of Quantities	VI-1 to VI-16
	Preamble of Bill of Quantities	VI-1
	Bill of Quantities	VI-3

SECTION - V

Works Requirements

This Section contains the Specification, the Drawings, and supplementary information that describe the Works to be procured.

Scope of Work

1. Description of the Project:

1.1 General:

The main components of the **11/0.4-0.23 kV Electrical Distribution Network Project** include:"Supply, Delivery, Installation/Erection, Testing and Commissioning of 11/0.4-0.23 kV Electrical Distribution Network on turnkey basis."The scope of supply of material and related services under this Project, but not limited to, are given below:

1.2 This Tender Document mainly includes electrification through extension of 11 kV Line, installation of Distribution transformers and construction of 400-230 volt Distribution lines. The Contractor shall have to prepare list of line material and equipment required, supply and delivery all the required line materials as specified or referred to in the technical specifications of this Tender Document& equipment, install/erect and construct the 11 kV and 400-230 Volt Distribution network, test, commission and handover the network to NEA after completion.

1.3 If any discrepancies in the specifications and drawing are found, shall be discussed and rectified before or at the time of final approval of drawings.

1.4 The bidders are requested to visit site(s) at its own to get the general idea about 11/0.4-0.23 kV Electrification network location and quote the price accordingly.

1.5 The Contractor shall have adequate manpower to execute the works at site(s) to complete the work within the scheduled time.

1.5.1 Equipment and Materials:

The Contractor to his designated store area shall deliver all equipment and materials. Such materials shall be delivered, unloaded and placed in stores in an acceptable manner and approved by the Employer or his authorized representative.

1.5.2 Erection:

When 11/0.4-0.23 kV Electrification network area has been completed and accepted by the Employer, the Contractor will make an inventory of the

assemblies erected, and submit it to the Employer for approval and final payment.

Before the Taking-Over of the works, the Contractor shall clean up all areas in which he has worked, place all unused materials in the designated stores and settle any claims, which may have resulted from his work and occupancy of the area. He shall then remove all equipment, vehicles, manpower and facilities, which, he has brought in except those which may be specifically exempt by the Employer.

1.6 **Contract Scope:**

This section outlines all major work to be carried out by the Contractor all the new and existing 11/0.4-0.23 kV Electrification network. All engineering design and materials shall be subject to the Employer/Employer's Representative approval.

2. Special Requirements of the Project

2.1 General

2.1.1 This specification covers the general requirements for design, manufacture, assembly, shop test, delivery, field, test, dismantling and installation commissioning of works for 11/0.4-0.23 kV Electrification network.

2.1.2 Any deviation from this specification or the Technical Specification shall be clearly stated with reasons.

2.2 Conditions of Service

2.2.1 All plant and equipment supplied under this Contract shall be suitable for the following system and site conditions.

(a) System electrical parameters

(1)	System voltage	11kV and 0.4/0.23kV
(2)	Number of phase	3
(3)	Frequency	50Hz

(b) Climatic conditions

(1) Ambient temperature

- Maximum 55 deg. C
- Minimum 0 deg. C
- Annual average 32 deg. C

(2) Wind velocity

- Maximum 34.4m/sec

(3) Relative humidity

- Maximum 100%
- Minimum 20%

(4) Monsoon season June-August

(5) Precipitation

- Maximum 1,000 mm/month
- Minimum Zero/month

(c) Altitude of site Less than 1000m from sea level

(d) Seismic force O.15G

(e) Isokeraunic level 50

The information in this Sub-Clause is given solely for the general assistance of Bidders and no responsibility for it will be accepted nor will any claim based on this article be considered. The Bidder is advised to survey the Sites covered under this Contract to acquaint himself with site conditions.

2.2.2 Damage to existing line equipment and structures shall be repaired by the Contractor at his expense.

2.3 Codes and Standards

2.3.1 All plants and equipment supplied under this Contract shall conform to or be of higher quality than the latest applicable standard as listed in the following .

IEC	- International Electro-technical Commission
ANSI	- American National Standard Institute
BS	- British Standard
NEMA	- National Electrical Manufacturers Association
IEEE	- Institute of Electrical and Electronics engineers
ASTM	- American Society of Testing and Materials
ASME	- American Society of Mechanical Engineers
IPCEA	- Insulated Power Cable Engineers Association
ISO	- International Organization for Standardization
ASCE	- American Society of Civil Engineers
ACI	- American Concrete Institute
NEC	- National Electrical Code (ANSI CI)
ISI	- Indian Standard Institute

2.3.2 If the Specifications contained in this Contract conflict in any way with any of the reference standards, the Specifications shall take precedence. If there are conflicts

between different specified reference standards covering the same material or equipment, the standard which will provided the highest quality and most suitable application as determined by the Employer/Employer's Representative shall prevail.

2.3.3 References to standards or to equipment of a particular manufacturer shall be regarded as followed by the words "or equivalent" except as otherwise noted. The Contractor may propose alternative standards, or equipment, which shall be equal to those, specified. If the Contractor for any reason proposes alternatives to or deviations from the above standards, or desires to use equipment not covered by the above standards, the Contractor shall state the exact nature of the change, the reason for making the change, and shall submit, for the approval, relevant specifications of the equipment in the original language, and in case that these specifications are written in language other than English, the English version shall be attached and shall govern. The decision of the Employer/Employer's Representative in the matter of equality will be final.

2.4 Construction Management

2.4.1 The overall management of the supply, delivery and construction activities of the Contractor shall be the right of the BRO, NEA and shall be performed by the Personnel authorized by BRO/NEA. The Authorized Personnel shall supervise and administer the Contract work and inform the NEA.

2.4.2 **The Authorized Personnel shall:**

a) Identify specific portions of the total works and establish priorities of construction works of those portions to permit an orderly rehabilitation of existing facilities and reduce consumer outages to the minimum extent practicable.

b) Revise and approve all Contractors' rolling work schedules to ensure the compliance with system construction and/or rehabilitation priorities and sequences, and co-ordinate necessary outages with local BRO/NEA, operations forces.

c) Supervise and inspect the work completed by the Contractor for conformance with the Schedule of Requirements, Construction Standards, approved Construction Drawings and other Contract requirements.

d) Carry out field measurement of the Works carried out by the Contractor and maintain a field measurement book to assess the progress made every day/month. Measurement so made shall be the basis for raising invoices of the Contractor for making progress payment for that part of the Works completed.

e) Review and recommend for the approval of Contractor's periodic invoices for completed construction works.

f) Prepare and issue the certificates of Provisional and Final Acceptance and make such payments to the Contractor as required by the Contract.

g) Supervise the issue, receipt, and accounting of BRO/NEA -furnished materials and equipment to, and from the Contractor.

h) Assist to administer the Contract in all respects.

2.4.3 The Engineer, as assigned by the BRO/NEA, shall assist the Authorized Personnel in all general functions listed in Clause 2.3.2 above, and in particular, the general functions described in Clause 2.4.2 a, b and c.

(a) The assigned Inspector(s) as shall inspect the work performed by the Contractor for compliance with the Schedule of Requirements, Construction Standards and the approved construction drawings and maintain records of such approved works to enable periodic payments to the Contractor for work performed, and acceptance of the Work.

2.5 Contractor's Workforce

2.5.1 The Contractor shall employ only the experienced, competent and skilled staffs. Staffs shall include engineers, surveyors, draftsmen, superintendents, foremen, lineman, laborers, mechanics, drivers, and persons of other skills necessary to perform the Works in accordance with the Construction Standards, the approved design and construction drawings, structure data sheet, manufacturer's recommendations, to perform the necessary administrative and warehouse functions, and to complete the Works in accordance with the Contract Execution Schedule.

All line construction staff shall be examined for working skills and must demonstrate to the BRO/NEA's satisfaction, working skills and knowledge of all the materials and equipment they will be assigned to work with before being assigned to field work.

2.5.2 The Contractor shall maintain his workforce in sufficient numbers and skills at all times to maintain the smooth execution of works in accordance with the approved Rolling Construction Schedule.

2.5.3 Whenever, in the opinion of the Authorized Personnel, any employee of the Contractor is unable to perform his assigned task adequately, incompetent, careless, or obstructs the progress of Work, the Contractor shall, on receipt of written notice from the Authorized Personnel, discharge, or otherwise remove that employee from the Work and not employ the employee again under the Contract.

2.5.4 During the progress of work, the Contractor shall assign to the work to an experienced and formally qualified engineer and experienced construction superintendent, both of who can communicate well in the spoken and written English language, and who shall be designated in writing to the Authorized Personnel as an authoritative representative of the Contractor.

2.5.5 The Contractor's workforce shall at all times during the work have in their immediate possession the latest approved Construction Standards, and Structure Data Sheets covering the work that is being performed. The Contractor shall provide copies of the relevant plans and Standards to his construction workforce at his cost. In the event that the Contractor's workforce are found to be working without possession of the above-listed construction documents, the Inspector shall have the right to stop the work being performed until such time as the workforce is provided with the required documents.

2.6 Contractor's Facilities

2.6.1 The Contractor shall establish, and maintain throughout the period of the performance of the Contract Works sufficient and adequate facilities to store and maintain materials and equipment and to serve as a base for all Contractor operations necessary to perform the Works.

2.6.2 The Contractor shall establish and maintain security of Contractors' store by himself.

2.6.3 The Contractor shall establish a Project Office at a location approved by BRO/NEA wherein he will conduct general administrative operations. That office shall be provided with telephone communications facilities. Other facilities, which the Contractor may require, shall be so located and provided to permit efficient operations and minimize delays.

2.6.4 Prior to the beginning of construction activities the Contractor shall establish, at his Project headquarters location, a demonstration and training installation of each of the following structures as listed in Construction Standards and Drawings

The installation shall include at least 3 spans of ACSR conductor of each size to illustrate the type of materials used for tangent, angle and dead-end construction for 11 kV and 400/230 V lines and shall be built and dismantled frequently by the Contractor as part of the training and testing requirements. Structures need not be spaced more than 10 meters apart. The intent is to provide visible examples of the application of the various materials used on the project and to provide training and testing facility for the Contractors line construction personnel.

The structures shall be inspected and approved by the Engineer.

The cost of erecting and dismantling the above structures shall be borne by the Contractor.

3. Technical Preambles

3.1 General Information

This describes the requirements of those items which have not been included in the Construction Standard and which are of general nature.

(a) All the Construction Units shall include the cost of preparation, revision and reproduction of supporting Structure Data Sheets (SDS) and drawings.

(b) All Construction Units shall include the cost of cutting and painting bolt ends extending more than 30 mm beyond the nut if necessary.

(c) All Construction Units shall include necessary cost for trimming and cutting of trees to clear route for new or existing works. Trimming and Cutting of trees shall be the responsibility of the Contractor but **BRO/NEA** shall assist to obtain necessary permit for the same.

3.2 Construction Unit 1

Single line diagram and Final BOQ

The Construction Unit is for carrying out **detail analysis of existing quantities (Provided by NEA) to be used in different construction units**, and preparation of final SDS and As Built Drawing.

Unit: This construction unit is per km of line length.

3.2.1 Structure Data Sheet (SDS)

SDS shall be prepared to provide the details of specific construction information necessary for erection of pole structures with hardware and accessories, conductor stringing and transformer installation. The SDS shall be used in conjunction with the area plan drawing to document the works to be performed. A copy of the SDS format shall be provided in the event the bidder awarded the contract.

Abbreviations used in the preparation of SDS shall be defined as follows:

S. No.	Nomenclatures	Meaning
A	Pole Construction No.	Number assigned by the Contractor to identify pole on plan drawing.
B	Span	Length of conductor span between poles
C	BK	Angle of line deflection in degrees
D	Pole	Pole quantity

E	Frame	The Construction Standard for 33, 11 kV system for which the pole is to be framed.
F	Stay	The Construction Standard for stay to be installed.
G	Transformer	The Construction Standard for which the transformer/installation is to be framed.
H	Conductor	The number and size of ACSR conductors in mm^2 for 11 kV
I	Conductor (km.)	Running km length of conductor.
J	SA	Single Arm Structure
K	TO	Tee Off Structure
L	DE	Dead End Structure
M	DDE	Double Dead End Structure
N	HS	H- Pole Structure
O	TR	Transformer Structure
P	A	Single wire type stay
Q	B	Double wire type Stay
R	C	Flying type stay
S	D	Flying type with shorter stay lead or bow type stay
T	SA1	Single arm structure for deviation between $>15^0$ □30deg is to be framed
U	A	Low voltage frame type A
V	B	Low voltage frame type B
W	C	Low voltage frame type C
X	D	Low voltage frame type D
Y	E	Low voltage frame type E

Note:

- Information for a single pole location need not be confined to a single row.
- All works, whether new or on existing systems, shall be documented on the SDS.

- Each SDS shall include the applicable "As Built" Plan Drawing number(s).
- Similarly each "As Built" Plan Drawing shall include the applicable SDS number(s).

Photographs of the Work

The Contractor shall provide along with the monthly progress the **digital photographs** of the work during construction and installation of each construction unit as and when required by the Department.

Bidders shall submit two set of photographs for each installed transformer taken from the front, rear and side before final commissioning and testing. The photograph shall clearly show the connection of transformer accessories like Lightening Arrester, Drop Out set, MCCB connection and jumpering to overhead line and cabling from transformer low voltage side to MCCB. Any progress payment relating to construction unit which includes transformer shall contain with above photographs. ***Bills without photographs shall not be entertained.***

These photographs shall not be smaller than Post Card size and such photograph inscribed with its serial number, Transformer number, Transformer location, date when taken and a short title shall be furnished in A4 size photo album to the Owner. The Contractor shall also submit the electronic copy of the photograph to the BRO/NEA.

Structural Data Sheet

Structural Data Sheet shall be checked and prepared in such a manner that it shall show each and every items installed in each pole and transformer platform and the actual length of each and every span.

3.3 Construction Unit 2

11 kV, 0.4/0.23 kV Supports, Insulators and Hardware

This Construction unit is for the supply and installation of single, double, triple or four pole structures fitted with cross-arm, insulators and other hardware.

This covers the work such as Supply and delivery of all the necessary materials from respective factory warehouse, excavate pole hole, set pole, if necessary, back fill and tamp poles, compact the back filling adequately, realign, if necessary, install framing including insulators and hardware all complete.

Support Type	Description	Reference Specification/Standard

		Equipment	Construction
PH12	11 kV, Single Arm Structure		
PH22	11 kV, Single Pole Dead end type Structure		
PH32	11 kV, Single Pole Double Dead end type Structure		
PH42	11kV Double Pole Structure-Intermediate Support Dead End Type		
PH52	Single Arm Tapping Accessories		
PL12	8 m LT 3 Phase-4 wire		
PL22	8 m LT 2 Phase-3 wire		
PL32	8 m LT 1 Phase-2 wire		
PL42	8 m LT 3 Phase-4 wire (Tee-Off)		
PL52	8 m LT 3 Phase-3 wire (Tee-Off)		
PL62	8 m LT 3 Phase-2 wire (Tee-Off)		
DS2	11 kV O/H line double pole structure DO set type		
S11	Additional Insulator with Nut Bolt for Branching and Composite Line		

3.4. Construction Unit 3

11 kV Conductor and Accessories

This construction unit is for the supply, delivery and stringing of 11 kV and 400/230 V conductor and accessories.

This unit covers the Supply and delivery of all the necessary materials from respective factory warehouse to the site, set up wire stringing reels, pulling lines, stringing blocks on poles/cross-arms, install and remove temporary guard structures, if necessary, install and remove temporary structures to keep conductor from dragging on earth, if necessary. Pull conductors, sag and dead-end, remove conductor from stringing blocks, tie to insulators, make necessary compression joints, and connect jumpers and complete installation.

Conductor Type	Description	Reference Specification/Standard	
		Equipment	Construction
CH12	11 kV, for three wire Rabbit		
CL21	400 V, for three phase of LT four wire Rabbit		
CL31	400 V, for two phase of LT three wire Rabbit		
CL41	230V , for single phase of LT two wire Rabbit		
CL 52	For neutral phase of LT line Weasel		

3.5 Construction Unit 4

Stays and Anchors

This Construction unit is for the supply, Delivery and installation of complete single, double, flying or bow type stay assembly.
This Unit includes the Supply and delivery of all the required materials from factory warehouse to site, excavate hole, install anchor rod, back fill with gravel if specified, ramp till well compacted, install stay wire and stay insulator, adjust tension and further adjust tension if necessary after installation and stringing of conductor. Provide sand and stone as a local material for the installation of stay for HT/LT distribution line and install the stay sets as per the construction standard drawings.

Type of Stays and Anchors:

Stay Type	Description	Reference Specification/Standard	
		Equipment	Construction
ST21	HT Single Stay Steel Tubular Pole		
ST22	LT Single Stay Steel Tubular Pole		

3.6 Construction Unit 5

11/0.4 kV Transformers

This Construction unit is for the Supply, Delivery and Installation of 11/0.4 kV outdoor pole mounted type distribution transformer and associated lightening arresters, drop out fuse set, low voltage protection panel, cables, earthings, Transformer Pole Structures and related works for complete installation.

This will cover the supply and delivery of all the necessary materials from respective factory warehouse to the installation site, pole mount transformer on elevated platform, install LV cable between transformer LV terminals and protection panels, including cable and jumper connections, connect LV neutral earth terminal with earth lead etc.

S.N.	Transformers Capacity	Reference Specification/Standard	
		Equipment	Construction
TR12	25 kVA Transformer (If Transformer is to be installed middle of the HT Span)		
TR22	50 KVA, 11/0.4-0.23 kV, three Phase Transformer (Middle of the HT span)		
TR32	100 KVA, 11/0.4-0.23 kV, three Phase Transformer (Middle of the HT span)		
TR42	25 kVA Transformer (If Transformer is to be installed in the dead end of the HT line)		
TR52	50 KVA, 11/0.4-0.23 kV, three Phase Transformer (End of the HT Line)		
TR62	100 KVA, 11/0.4-0.23 kV, three Phase Transformer (End of the HT Line)		

3.7 Construction Unit 6

11 kV Distribution Cut Out

The construction unit is for the supply, Delivery and installation of 11 kV Drop Out set with complete accessories for the connection as a sectionlizer in the branch tapping point of main 11 kV Line.

S.N.	Disconnect Switch	Reference Specification/Standard	
		Equipment	Construction
PH 62	11kV Double Pole Structure-with Disconnecting Switch		

3.8 **Construction Unit 7**

This Construction unit covers all the necessary works for the preparation of final as built drawing, Structural Data Sheet, testing, charging of electric distribution system and handover with documentation to concerned Community Based Organizations

3.9 **Construction Unit 8**

Tools and Equipment

This construction unit is for the supply and delivery of Tools and Equipments that are required for the communities after the handover.

S.N.	Tools and Equipment	Reference Specification/Standard	
		Equipment	Construction
TE1	Megger, Ladder, operating rod , Tong Tester etc. (upto 5 transformers)		
TE2	Megger, Ladder, operating rod , Tong Tester etc. (6 - 10 transformers)		
TE3	Megger, Ladder, operating rod , Tong Tester etc. (above 10 transformers)		

3.10 **Construction Unit 9**

Labour Rates

This construction unit is intended to use for such work, which has not been defined by a Construction standard. Contractor shall submit to BRO/NEA, along with the bid, a written description of work which may have to be performed under certain situation and which was not foreseen during the design and study. This shall include location, number and classification of personnel to perform the work and estimated number of hours/day per man. This construction unit is to be charged only upon the approval of BRO/NEA. This unit includes necessary transport of equipment to perform the assigned work.

S.N.	*Designation*	Rate per hour or

		per day
1	Engineer	
2	Supervisor	
3	Foreman	
4	Lineman/ Electrician	
5	Helper	
6	SkilledLabour	
7	UnskilledLabour	

Note : ***The construction unit outlined in these sections contains general information and may vary. The actual construction units will be as per BOQ of the financial proposal.***

TECHNICAL SPECIFICATION

(Electrical Equipment)

SPECIFICATION

ACSR CONDUCTOR

1. Scope

This Specification covers the fabrication and supply of aluminum conductors, steel reinforced (ACSR) commonly used on overhead power line construction.

2. Description

2.1 The ACSR conductor shall be a concentrically strand right-hand lay conductor.

2.2 The ACSR conductor shall be fabricated in accordance with BS: 215/ IEC: 209, latest revision, and all referenced standards therein or other equivalent national standards which will result in a conductor of same stranding, quality, conductor diameter, stand size, direction of lay, and lay ratio. These equal characteristics are required to achieve full tensioning capability with bolted type tension sets; with full/tension compression splices and other commonly use line hardware.

2.3 The following conductors in the quantities specified in the Price Schedule shall be supplied:

Code name	Nominal area, mm^2	Stranding, (Al/steel)	Breaking strength, kN	Mass, kg/km	Resistance at 20 ° C (Ohm/Km)
Dog	100	6/7	32.7	394	0.273
Rabbit	50	6/1	18.35	214	0.540
Weasel	30	6/1	11.4	128	0.907

2.4 The ACSR conductors must be manufactured by a company approved to quality standard ISO 9001 or ISO 9002. The ISO certification number, the name of the authorized approving authority with the contact address and telephone and fax numbers shall also be stated. The Bidder shall enclose a verified copy of the ISO certificate with the bid.

3. Packing

3.1 All conductors shall be packaged in non-returnable wooden reels and shall be protected against damage in handling, shipping, and storage by heavy wood lagging securely applied to each reel. All reels shall be sufficiently sturdy to withstand shipment, storage and field construction operations without distortion or disintegration.

3.2 Each reel of the conductors furnished shall contain only one (1) length of conductor.

3.3 All reels shall be legibly marked in paint with the following information:

a) Size of conductor

b) Type of conductor

c) Length in meters

d) Net weight of conductor

e) Direction of rolling

3.4 The standard length of the completed conductor is shown in the table below:

Conductor size, mm^2	30	50	100
Normal length of the conductor, m	3,000	2,000	1,000

4. Tests

4.1 The manufactured conductor shall be tested in full compliance with the governing standard (including the following tests) and a certified test report shall be produced for all tests conducted.

Aluminum Wire

(a) Tensile Test

(b) Wrapping Test

(c) Resistivity Test

Steel Wire

(a) Tensile Test

5. Bid Documentation

5.1 The Bidder shall provided with the Bid two (2) clear copies of the standard governing fabrication and testing of the conductor and two (2) clear copies of all other specifications referenced therein as relevant to the fabrication and testing of the ACSR conductor.

5.2 The Bidder shall provide the name and the address of the manufacturers of the conductor being offered and the length of the conductor in the manufacturer's standard reels, including net and gross weights.

5.3 The Bidder shall also furnish the Certificate of Compliance, as specified in Paragraph 4.3 of BS 215, Part 2:1970, at the time of the shipment of each lot of conductor, or as required by the appropriate section of the equivalent national standard.

5.4 All data shall be bound separately from the Bid documents.

SPECIFICATION

PORCELAIN INSULATORS

1. Scope

This Specification covers the fabrication and supply of pin insulators, disc insulators, stay insulators and shackle insulators, as herein specified for use on overhead power line construction.

2. General

2.1 All porcelain insulators shall be fabricated and tested in accordance with the Standards referenced or other national or international standards, for each type of insulator.

2.2 Porcelain shall be sound, free from defects, thoroughly vitrified and smoothly glazed. The glaze shall be brown in color. The glaze shall cover all exposed parts of the insulators.

2.3 The design of insulators shall be such that stresses due to expansion and contraction in any part of the insulator shall not lead to deterioration. The porcelain shall not engage directly with hard metal.

2.4 The cement used in construction of insulators shall not give rise to chemical reaction with metal fittings and its thickness shall be as uniform as possible.

2.5 The insulators should be manufactured in **automatic temperature-controlled kilns** to obtain uniform baking and better electrical and mechanical properties.

2.6 The manufacturer of the Insulators must have been accredited with ISO 9001 (including design in the scope of registration)quality certification.

3. Pin Insulator

3.1 The pin insulator shall be manufactured and tested in accordance with IS: 731-1971 and IS:3188 or the latest version thereof or any other national or international standards that ensures at least equal or better quality to the standard mentioned above, will also be acceptable. The lead thread shall be compatible with the insulator pin specified in these documents. (SPECIFICATION: HFT-01)

The pin insulator shall have following ratings and features:

Highest system voltage	12 kV	36 kV
Rated voltage	11 kV	33 kV
Creepage distance (min)	230 mm	580 mm
Wet power frequency withstand voltage	35 kV	75 kV
Impulse withstand voltage	75 kV	170 kV

Puncture power frequency voltage (min)	105 kV	180 kV
Visible discharge voltage	9 kV	27 kV
(Effective)		
Cantilever strength	5 KN	10 KN
G I pin head	Small	Large
	IS Ref.165P	IS Ref.L300N
	IS 2486 Part-II	

4. Disc Insulator

4.1 The disc insulator shall be manufactured and tested in accordance with IS: 731-1971 or latest version thereof or any other national or international standards that ensures at least equal or better quality to the standard mentioned above, will also be acceptable.

4.2 The disc insulator shall be ball and socket fitting type. The disc insulator shall have the following ratings and features:

Highest system voltage	12 kV
Rated voltage	11 kV
Porcelain diameter (min)	255 mm
Spacing	145 mm
Creepage distance (min)	280 mm
Power frequency puncture	
Withstand voltage	1.3 × Actual dry flashover voltage
Wet power frequency	
Withstand voltage	35 kV
Impulse withstand voltage	75 kV
Puncture power frequency	
Voltage (min)	105 kV
Visible discharge voltage	9 kV

Mechanical strength	45 KN
Ball and socket size	16 mm B
Applicable standard for	
Special characteristics	IS: 3188-1980

5. Stay Insulator

5.1 The stay insulator shall be manufactured and tested in accordance with IS: 5300-1969 or the latest version thereof or any other national or international standards that ensures at least equal or better quality to the standard mentioned above, will also be acceptable. The stay insulator shall have following ratings and features.

-	Highest system voltage	12 kV	36 kV
-	Rated voltage	11 kV	33 kV
-	Creepage distance (min)	41 mm	57 mm
-	Minimum failing load	44 KN	88 KN
-	Power frequency withstands voltage, 1 minute:		
	Dry	18 kV	27 kV
	Wet	8 kV	13 kV
-	IS designation	A	C

6. Shackle Insulator

6.1 The shackle insulator shall be manufactured and tested in accordance with IS: 1445-1977 or the latest version thereof or any other national or international standards that ensures at least equal or better quality to the standard mentioned above, will also be acceptable.

6.2 The shackle insulator to be furnished shall have following ratings and features:

Highest system voltage	1 kV
Rated voltage	500 V
Power frequency withstands voltage, 1 minute:	
Dry	23 kV
Wet	10 kV

Power frequency puncture withstand voltage, 1-minute
1.3 × actual dry flashover voltage

Leakage distance (min)	75 mm
Mechanical strength	16 KN
IS type	2
Type	A

7. **Marking**

7.1 Each insulator shall be legibly and indelibly marked to show the following:

a) Name or trademark of manufacturer.

b) Year of manufacture.

c) Minimum failing load in Newtons (for pin and disc insulators only)

7.2 Markings on porcelain shall be printed and shall be applied before firing.

8. **Tests**

The insulators shall comply with the following tests as per IS: 731-1971

8.1 **Type Test**

a. Visual examination,,
b. Verification of dimensions,
c. Visible discharge test,
d. Impulse voltage withstand test,
e. Wet power frequency voltage withstand test
f. Temperature cycle test,
g. Mechanical failing load test
h. 24-hour mechanical strength test for strain insulators
i. Puncture test
j. Porosity test and
k. Galvanizing test

8.2 **Routine Test**

- Visual examination
- Mechanical routine test
- Electrical routine test

9. **Bid Documentation**

9.1 The Bidder shall provide with the Bid two (2) clear copies of the governing standards for fabrication and testing of porcelain insulators and two (2) clear copies of all other relevant standards referenced therein.

9.2 The Bidder shall provide certified type test results of all types of porcelain insulators as required by governing standards and the documentary evidence to **show that it has automatic temperature-controlled kilns. Failure of bidder to provide the said documents shall lead to rejection of its bid.**

9.3 The Bidder shall furnish two (2) sets of dimensional drawings of all types of porcelain insulators.

9.4 The Bidder shall provide complete description, catalogue (in original) dimensional drawings of all types of insulators.

9.5 All data, drawings, catalogues and other technical documents shall be bound separately from the Bid documents.

SPECIFICATION

INSULATOR PINS

1. Scope

This Specification covers the fabrication and supply of bolt-type cross arm insulator pins.

2. Description

2.1 The insulator pin to be supplied shall conform to the nominated standards or to internationally accepted standards and to the shape and dimensions shown in the drawings contained in this specification. The insulator pin shall be furnished with a spring steel split lock washer and nut assembled on the insulator pin. The ratings and features of the insulator pins shall be as follows:

	For 11 kV	**For 33 kV**
Head type	Small S165P	Large L 300N
Total length	315 mm	450 mm
Stalk length	165 mm	300 mm
Shank length	150 mm	150 mm
Minimum failing load	5 KN	10 KN
Applicable standard	IS: 2486 (Part I & II) or equivalent national or international standard.	

The insulator pins shall be compatible with the insulators specified in Specification –BRO-02 and those listed in the Price Schedule.

3. Material

3.1 The insulator pins specified herein shall be fabricated from hot rolled steel. The pin shall be a single piece obtained preferably by the process of forging. It shall not be made by jointing, welding, shrink fitting or any other process from more than one piece of material. It shall be of good finish free from flaws and other defects. The finish of the collar shall be such that a sharp angle between the collar and the shank is avoided.

4. Galvanizing

4.1 All ferrous pins, nuts and washers except those made of stainless steel shall be hot dip galvanized. The threads of nuts shall be cut after galvanizing and shall be well oiled and

greased. The galvanizing shall conform to IS 2629-1985 or equivalent national or international standard.

5. Finish

All insulator pins shall be reasonably smooth on all surfaces and free of sharp projections.

6. Tests

6.1 Insulator pins shall comply with the following tests as per IS: 2486.

6.2 **Type Tests:**

- Visual examination test,

- Checking of threads on head,

- Galvanizing test,

- Mechanical test.

6.3 **Acceptance Tests:**

- Checking of threads on head,

- Galvanizing test,

- Mechanical test.

6.4 **Routine Test:**

- Visual examination.

7. Bid Documentation

7.1 The Bidder shall furnish with the Bid a complete description of all insulator pins to be furnished, including dimensional drawings, certified copies of type-test results of all tests required, the identity of the proposed manufacturer, and the manufacturers' catalogue number and catalogue cuts. All technical data required to be furnished with the Bid shall be bound separately from the Bid Document.

SPECIFICATION

DISC INSULATOR FITTINGS

(TENSION SET)

1. Scope

1.1 This specification covers the fabrication and supply of tension type disc insulator fittings.

2. Description

2.1 The disc insulator fittings shall be supplied with ball and socket couplings, twisted straps, and tension clamps. The insulator fittings shall conform to the shape and dimension shown in the drawings.

3. Material

3.1 The tension clamp shall be of the malleable iron type. Other accessories like ball and socket, nuts, bolts shall be made of hot rolled steel and the twisted cross arm strap shall be made of MS sheet metal. Cotter bolts and U-bolts shall be of galvanized steel. Cotter pins shall be stainless steel.

3.2 All forgings and castings shall be of good finish and free from flaws and other defects. The edges on the outside of fittings, such as the ball socket and holes, shall be rounded. The nominal dimensions of the ball and socket, ball eye and twisted cross arm straps, are given in Drawings. The ultimate strength of clamps shall not be less than 41 KN.

4. Galvanizing

4.1 All ferrous fittings and the parts other than those of stainless steel, shall be hot dip galvanized as per IS: 2629-1985 or equal internationally recognized standards.

5. Tests

5.1 The disc insulator fittings shall comply with the following tests as per IS: 2486 or equivalent national or international standard.

(a) ***Type Test:***

- Verification of Dimensions,
- Visual Examination Test
- Slip Strength Test,
- Mechanical Test,
- Electrical Resistance Test,
- Heating Cycle Test.

(b) ***Acceptance Tests:***

- Verification of dimensions,
- Galvanizing,
- Mechanical Tests.

(c) ***Routine Tests:***

- Visual Examination Tests
- Routine Mechanical Test

SPECIFICATION

SHACKLE INSULATOR FITTINGS

1. Scope

1.1 This Specification covers the fabrication and supply of D-Iron type shackle insulator fittings, and shackle strap required for shackle insulators for use in overhead low voltage line construction.

2. General Requirements

2.1 The shackle fittings shall be free of burrs, splinters, splits, sharp points and edges which may damage conductors or show evidence of poor workmanship. All ferrous fittings and parts other than stainless steel shall be galvanized as per IS: 2629-1985 or equivalent national or international standard. The minimum coating thickness shall be not less than 85 micron.

3. Other Requirements

3.1 D-iron type shackle fittings shall consists of the following main components:

- Mild steel D-iron;
- 1 no. of mild steel bolt and nut;
- 1 no. of spring washer.

The shackle strap consists of:

- 2 nos. of mild steel straps;
- 1 no. of mild steel bolt and nuts;
- 1 no. of spring washer.

The shackle strap shall be compatible with the type of shackle insulator intended to be used with it.

4. Tests

4.1 The shackle fittings shall comply with the following tests as per IS: 7935 or equivalent national or international standard:

1. ***Type Tests:***

- Visual Examination,
- Verification of Dimensions,

- Galvanizing.

2. *Acceptance Tests:*

- Verification of Dimensions,

- Galvanizing Tests.

3. *Routine Test:*

- Visual Examination Test.

SPECIFICATION

CROSS ARMS AND BRACING ANGLES

1. Scope

This Specification covers the fabrication and supply of steel cross-arms and bracing members commonly used in overhead power line construction.

2. Material

2.1 The steel cross-arms shall be fabricated from hot-rolled channels and angles.

2.2 The steel channels and angles shall be fabricated and tested in accordance with Indian Standards IS: 226-1975 and IS-808-1964 or any revision thereof or other equivalent national or international standard provided that the resulting steel stock is of equal quality and strength. The minimum tensile strength of the steel shall be 4200 kg/cm2.

3. Description

3.1 The steel cross-arms and bracing angles shall be of sizes shown in the Table 1: Cross-arms and bracing angles, contained herein.

3.2 Conceptual hole pattern and size of holes on cross-arm channels are shown in appropriate drawings herein, however, the Supplier must confirm with the Project the locations and sizes of holes prior to the manufacture.

3.3 The surface of the steel shall be flat after drilling or (punching) and free of dimpling or imperfections. The hole edges shall be broken by reaming. The holes shall be full dimension after galvanizing and no minus tolerance of specified hole size will be accepted.

3.3 The steel cross-arm and bracing angles shall be furnished reasonably smooth on all surfaces and free of burrs or sharp projections.

4. Galvanizing

4.1 The steel cross-arms and bracing angles shall be galvanized after fabrication in accordance with IS: 2629-1985 or any revision thereof or any other national or international standards that ensure at least a substantially equal quality to the standard mentioned above will also be acceptable.

5. Tests

5.1 Apart from the tests indicated herein in the referenced standards, the channels and angles shall undergo following tests:

- Visual Inspection;

- Verification of Dimensions;

6. Bid Documentation

6.1 The Bidder shall provide with the Bid two (2) clear copies of the governing standards for fabrication and testing of channels and angles and two (2) clear copies of all other relevant standards referenced therein.

6.2 The Bidder shall provide a complete description, catalogue and certified dimensional drawings of all channels and angles.

6.3 A clause-by-clause commentary on specification, specifying compliance and deviations, if any.

6.4 All data, drawings, catalogues and other technical documents shall be bound separately from the Bid documents.

TABLE 1: STEEL CROSS ARM CHANNELS AND ANGLE BRACES

S.No.	*Description*	*Type*	*Dimension in mm*	Ref. drg.
1	Triangular configuration 11,33kV,Single Pole			
	1.1 Pole Top	Channel	100×50×6.4×300	
		Channel	100×50×7.5×300 (33 kV)	
	1.2 Standard	Channel	100×50×6.4×1200	
			100×50×7.5×1900 (33 kV)	
	1.3 Bracing Member	Angle	40×6×660	
	1.4 Bracing Member	Angle	40×6×760 (33 kV)	
2	H - Pole Structure 11,33 kV:			
	2.1 Standard	Channel	100×50×6.4×2390	
		Channel	100×50×7.5×3300 (33 kV)	
	2.2 Bracing Member	Angle	40×40×5×2071	
		Angle	40×40×5×2723	
	2.3 Bracing Member	Angle	40×40×5×2416 (33 kV)	
		Angle	40×40×5×2872 (33 kV)	
3	Lightening Arrester and Cut-out Support (at transformer Platform)			
	3.1 Support	Channel	100×50×6.4×2348	
	3.2 Bracing Member	Angle	50×50×5×841	

SPECIFICATION – BRO-07

FLAT CROSSARM BRACE

1. Scope

This Specification covers the fabrication, testing and supply of flat, galvanized steel cross-arm braces.

2. Material

2.1 The flat cross-arms brace shall be fabricated out of hot-rolled steel flat.

2.2 The steel flat for cross-arms brace shall be fabricated and tested in accordance with Indian Standards IS: 226-1975, and IS-1731-1971or any revision thereof or other equivalent national or international standard provided that the resulting steel stock is of equal quality and strength. The minimum tensile strength of the steel shall be 4200 kg/cm^2.

3. Description

3.1 The brace shall be furnished reasonably smooth on all surfaces and free of burrs or sharp projections.

3.2 The surface of the steel shall be flat after drilling or (punching) and free of dimpling or imperfections. The hole edges shall be broken by reaming. The holes shall be full dimension after galvanizing and no minus tolerance of specified hole size will be accepted.

3.3 The brace shall have a minimum tensile strength of 3182 kg at the bolt-hole and bolt slot.

3.4 The brace shall be capable of being bent 10 degrees at the bolt hole or slot and 140 degrees at any point between hole and slot without cracking of the base metal on the outside of bent portion.

3.5 The brace shall be drilled and dimensioned in accordance with drawings And Construction Standards of the Bidding Document.

4. Galvanizing

4.1 The flat cross arm brace shall be galvanized after fabrication in accordance with IS:2629-1985 or any revision thereof or any other national or international standards that ensure at least a substantially equal quality to the standard mentioned above will also be acceptable.

5. Tests

5.1 Apart from the tests indicated herein in the referenced standards, the flat cross arm brace shall undergo following tests:

- Visual Inspection;

- Verification of Dimensions;

6. **Bid Documentation**

6.1 The Bidder shall provide with the Bid two (2) clear copies of the governing standards for fabrication and testing of flat cross arm brace and two (2) clear copies of all other relevant standards referenced therein.

6.2 The Bidder shall provide a complete description, catalogue and certified dimensional drawings of flat cross arm brace.

6.3 A clause-by-clause commentary on specification, specifying compliance and deviations, if any.

6.4 All data, drawings, catalogues and other technical documents shall be bound separately from the Bid documents.

SPECIFICATION – BRO-08

TRANSFORMER PLATFORMS

1. Scope

1.1 This specification covers the fabrication and supply of transformer platforms used in overhead power line construction.

2. Material

2.1 The transformer platform shall be fabricated from hot-rolled channels, angles and steel members.

2.2 The steel channels and angles for transformer platform shall be fabricated in accordance with Indian Standards IS: 226-1975 and IS-808-1964 or any revision thereof or other equivalent national or international standard provided that the resulting steel stock is of equal quality and strength. The minimum tensile strength of the steel shall be 4200 kg/cm^2.

3. Description

3.1 The platform shall be fabricated out of galvanized steel members, field assembled by bolting.

3.2 The platform will support the transformer above the ground and will be supported by two-pole structures of tubular steel telescopic or pre-stressed concrete (PSC) poles. Transformers will be bolted to the platform at four (4) points. Provision should be made for the mounting of transformers of different physical dimensions and ratings up to 200 kVA.

3.3 The platform shall be designed by the supplier and fabricated, in general, in accordance with the conceptual configuration as described in Construction Standards contained herein. The design shall provide support for a transformer of a minimum of 1500 kg in weight with a minimum safety factor of 2.0. The Platform shall be stiff and shall be capable of withstanding horizontal forces and an overturning moment due to seismic effects on a transformer with center of gravity 0.5 meter above its base and seismic horizontal acceleration of 0.4g. The platform shall be stiff and shall not visibly deflect under static loading.

3.4 The platform shall be supplied disassembled, complete with all required members and fastenings. Packing may be made by banding structural members. Fastenings shall be separately packed. Structural members shall be clearly identified for ease of assembly in accordance with the assembly drawing furnished by the supplier.

3.5 The platform shall be capable of attaching to support poles on the range of 150 to 250 mm. diameter for tubular pole; 250 to 350 mm in width and 140 to 180 mm depth for PSC poles.

4. Galvanizing

4.1 All ferrous parts of transformer platform shall be galvanized after fabrication in accordance with IS: 2629-1985 or any revision thereof or any other national or international standards that ensure at least a substantially equal quality to the standard mentioned above will also be acceptable.

5. Tests

5.1 Apart from the tests indicated herein in the referenced standards, the transformer platform shall undergo following tests:

- Visual Inspection;
- Verification of Dimensions;

6. Bid Documentation

6.1 A preliminary design of the platform shall be submitted with the Bid. Data to be supplied with the preliminary design shall be:

a) Steel classification proposed to be used and the characteristics thereof;

b) Two copies of Preliminary detail drawings of the proposed platform;

c) Data regarding:

1) Vertical and horizontal loading on poles,

2) Resultant safety factor,

3) Resultant deflection,

4) Resultant percent of allowable tension, compression, and shear limits for the steel selected and associated fastening,

5) Moments on pole due to seismic effects on the platform and transformers.

6.2 A clause-by-clause commentary on specification, specifying compliance and deviations, if any.

6.3 All data, drawings, catalogues and other technical documents shall be bound separately from the Bid documents.

SPECIFICATION – BRO-09

POLE CLAMPS

1. Scope

1.1 This Specification covers the fabrication and supply of galvanized steel pole clamps with nuts, bolts and washers for use on overhead power line construction.

2. Material

2.1 The pole clamp shall be fabricated out of hot-rolled steel flat.

2.2 The steel flat for pole clamp shall be fabricated and tested in accordance with Indian Standards IS: 226-1975, and IS-1731-1971or any revision thereof or other equivalent national or international standard provided that the resulting steel stock is of equal quality and strength. The minimum tensile strength of the steel shall be 4200 kg/cm^2.

3. Description

3.1 Outline details of pole clamps are shown in the drawings, Construction Standards of the Bidding Document. Dimensions may be changed to comply with the final pole sizes selected. Therefore, the dimensions must be confirmed with the Project prior to manufacture.

3.2 Two (2) numbers of galvanized, 16 mm. (dia.) X 60mm. (length), fully threaded bolts with two (2) nuts and washers shall be provided with each pole clamp.

3.3 The fittings shall be free of burrs, splinters, splits, sharp points and edges, which may damage conductors or show evidence of poor workmanship.

3.4 The surface of the steel shall be flat after drilling or (punching) and free of dimpling or imperfections. The hole edges shall be broken by reaming. The holes shall be full dimension after galvanizing and no minus tolerance of specified hole size will be accepted.

3.5 The pole clamps shall have a minimum tensile strength of 3182 kg at the bolt-hole and bolt slot.

4. Galvanizing

4.1 The pole clamps and nut, bolts and washers shall be galvanized after fabrication in accordance with IS: 2629-1985 or any revision thereof or any other national or international standards that ensure at least a substantially equal quality to the standard mentioned above will also be acceptable.

5. Tests

5.1 Apart from the tests indicated herein in the referenced standards, the pole clamps shall undergo following tests:

- Visual Inspection;

- Verification of Dimensions;

6. Bid Documentation

6.1 The Bidder shall provide a complete description, catalogue and two (2) copies of certified dimensional drawings of pole clamps.

6.2 A clause-by-clause commentary on specification, specifying compliance and deviations, if any.

6.3 All data, drawings, catalogues and other technical documents shall be bound separately from the Bid documents.

SPECIFICATION

GALVANIZED STEEL BOLTS, NUTS AND MISCELLANEOUS FASTENING COMPONENTS

1. Scope

This Specification covers the fabrication and supply of galvanized steel bolts and nuts, as specified herein, for use in overhead electric line construction.

2. Material

2.1 The bolts and nuts shall be manufactured and tested in accordance with IS: 1363 (Part I)-1984 or the latest version thereof or any other national or international standards that ensures at least equal or better quality to the standard mentioned above, will also be acceptable.

3. General

3.1 Bolts and nuts shall be furnished in the types, diameters and lengths specified in the Price Schedule. However, the dimensions and length of threading of bolt must be confirmed with the Project prior to manufacture.

3.2 Thread forms shall be consistent with all material/items listed herein and shall not strip or slip under sustained tensile loading equal to the design tensile strength of the threaded material item.

4. Machine Bolt and Nut

4.1 Each machine bolt shall be furnished with two (2) hexagonal nuts and two (2) plain washers assembled thereon.

5. Double-Arming Bolt and Nut

5.1 Each double-arming bolt shall be furnished with four (4) hexagonal nuts and two (2) washers assembled thereon.

6. Galvanizing

6.1 The stranded stay wire shall be galvanized after fabrication in accordance with IS:2629-1985 or any revision thereof or any other national or international standards that ensure at least a substantially equal quality to the standard mentioned above will also be acceptable.

7. Tests

7.1 The bolt and nut shall undergo tests in accordance with the relevant governing standard.

8. Bid Documentation

8.1 The Bidder shall provide with the Bid two (2) clear copies of the governing standards for fabrication and testing of bolt and nut and two (2) clear copies of all other relevant standards referenced therein.

8.2 The Bidder shall provide a complete description, and catalogue of bolt and nut.

8.3 The Bidder shall provide certified type test results of bolt and nut as required by governing standards.

8.4 A clause-by-clause commentary on specification, specifying compliance and deviations, if any.

8.5 All data, drawings, catalogues and other technical documents shall be bound separately from the Bid documents.

SPECIFICATION

GROUND RODS AND CLAMPS

1. Scope

This Specification covers the fabrication and supply of galvanized steel ground rods and clamps for use in overhead power line construction.

2. Description

Ground Rod

2.1 The ground rod shall be made of high carbon, open-hearth steel so as to achieve maximum strength. It shall be hot dip galvanized.

2.2 The ground rod shall be 19 mm in diameter and 8 Feet in overall length.

2.3 The driven end of the ground rod shall have a truncated cone point. The cone point shall be approximately 13 mm long, measured along the axis of the ground rod. The driving head of the ground rod shall have an approximate 3 mm, 45 degrees chamfer.

2.4 The manufacturing process shall assure that ground rod does not bend when driven into hard soils.

Ground Rod Clamp

2.5 The ground rod clamp shall be heavy duty forged steel clamp provided with a hex head cup point set screw of high strength steel with machine-cut threads. It shall be so manufactured that it gives low resistance connection. The ground rod clamp shall be galvanized.

2.6 The clamp shall suitably accommodate and clamp a 19 mm. ground rod and a stranded grounding conductor of 7/12 SWG size (SPECIFICATION).

3. Galvanizing

3.1 The galvanization of ground rod and clamp shall be in accordance with IS: 2629-1985 or any revision thereof or any other national or international standards that ensure at least a substantially equal quality to the standard mentioned above will also be acceptable.

4. Testing

4.1 Testing shall be in accordance with the governing standard.

5. Bid Documentation

5.1 The Bidder shall provide a complete description, and catalogue of ground rod and clamp.

5.2 The Bidder shall provide certified type test results of ground rod and clamp as required by governing standards.

5.3 A clause-by-clause commentary on specification, specifying compliance and deviations, if any.

5.4 All data, drawings, catalogue and other technical documents shall be bound separately from the Bid documents.

SPECIFICATION

GROUNDING CONDUCTOR

1. Scope

This specification covers the fabrication and supply of galvanized stranded steel grounding conductor for use in the neutral grounding of distribution transformers and body grounding of electrical equipment.

2. Description

2.1 The conductor shall be 7- wire stranded conductor and shall conform to the characteristics as specified in Table 1 contained herein. Stranded conductor shall be galvanized.

3. Galvanizing

3.1 The stranded stay wire shall be galvanized after fabrication in accordance with IS:2629-1985 or any revision thereof or any other national or international standards that ensure at least equal or better quality to the standard mentioned above will also be acceptable.

4. Bid Documentation

4.1 The Bidder shall provide with the Bid two (2) clear copies of the governing standards for fabrication and testing of grounding conductor and two (2) clear copies of all other relevant standards referenced therein.

4.2 The Bidder shall provide a complete description, and catalogue of grounding conductor.

4.3 The Bidder shall provide certified type test results of grounding conductor as required by governing standards.

4.4 A clause-by-clause commentary on specification, specifying compliance and deviations, if any.

4.5 All data, drawings, catalogues and other technical documents shall be bound separately from the Bid documents.

TABLE 1

GROUNDING CONDUCTOR MINIMUM REQUIREMENTS

Number of strand	7-N0. 12 SWG
Diameter of single strand	2.67 mm
Weight	299 kg/km
Short time fusing current	12 kA for 1 sec.
Resistivity	15 Micro-Ohm-cm

SPECIFICATION

PARALLEL GROOVE (PG) CLAMPS

1. Scope

This Specification covers design fabrication testing and supply of universal parallel groove (UPG) clamps and fittings commonly used in overhead electric power lines.

2. Description

2.1 The PG clamp shall be designed and manufactured to achieve full compatibility between clamps and conductors and produce uniform and electrically efficient connections between conductors for the class of connection intended.

2.2 The PG clamp is intended to be used for ACSR to ACSR conductor.

2.3 The body of PG clamp shall be made of aluminum alloy from a permanent mould process and hardware consisting of nuts, bolts and washer shall be made of hot dip galvanized steel. The PG clamps shall have sufficient mass and contact area to provide the thermal capacity required for load cycling and fault current. The clamps shall be designed to provide the distributed current density necessary to prevent hot spots, and current carrying rating of the conductors for which they are designated. PG clamp shall have oxide inhibiting compound and contact aid.

2.4 The clamps shall be manufactured to accommodate ACSR conductors as shown in Table 1.

2.5 The grooves on the clamps shall be open-edged on two (2) edges for easy installation over a run conductor and insertion of tap conductor.

2.6 The clamp shall be tested in accordance with the relevant ANSI standard or other equivalent national or international standard specifying the performance requirement for the electrical and mechanical characteristics of clamps. The clamps shall conform to all testing requirements of that standard for the classes of clamps considered.

2.7 Each clamp shall be marked with the type and size of conductor, which will correctly fit each groove.

3. Bid Documentation

3.1 The Bidder shall provide with the Bid two (2) clear copies of the governing standards for fabrication and testing of PG clamp.

3.2 The Bidder shall provide a complete description, and catalogue/drawing of PG clamp.

3.3 The Bidder shall provide certified type test results of PG clamp as required by governing standards.

3.4 A clause-by-clause commentary on specification, specifying compliance and deviations, if any.

3.5 All data, drawings, catalogues and other technical documents shall be bound separately from the Bid documents.

TABLE 1

PG CLAMP for ACSR to ACSR conductor

Groove A	Groove B	Identification
D	D	D-D
D	R	D-R
D	W	D-W
R	R	R-R
R	W	R-W
W	W	W-W

D= 100 mm^2 ACSR Conductor

R= 50 mm^2 ACSR Conductor

W= 30 mm^2 ACSR Conductor

SPECIFICATION

STAY SETS

1. Scope

This Specification covers the fabrication and supply of adjustable threaded, galvanized, ferrous, stay sets and nuts for use in overhead line construction.

2. Description

2.1 The stay set shall consist of mild steel; galvanized stay rod; stay tightener or adjustable head complete with stay plate a thimble of dimensions shown in the drawings in Construction Standards of the Bidding Document.

2.2 The stay rod shall be fabricated of mild steel of minimum tensile strength of 4200 kg/sq.cm. The other technical features and dimensions are given in Table 1 attached herewith.

2.3 The stay tightener shall be made of mild steel of minimum ultimate tensile strength of 42,000 kg/sq.cm. The thimbles shall be made of 1.219 mm (18 SWG) GI sheet, and shall be suitable for terminating steel stay wire with a preformed grip.

2.4 The stay plate shall be square type MS plate of dimensions shown in the attached drawings and mentioned in Table 1. The plate shall have a matching hole at the center to fit the end of the stay rod.

3. Fabrication

3.1 The stay rod and nut shall be fabricated to the shape and dimensions shown in Drawingsin Construction Standards Volume I of the Bidding Document.

3.2 The thread form at the threaded end of the rod, and that of the accompanying nut, shall be optional with the supplier. However, it shall be the responsibility of the Supplier to supply the stay rod with a thread form that shall sustain the rated loads specified in Table 1 without creep or stripping over the full life of the rod material at specified diameter.

3.3 After fabrication, the stay rod and nut shall be hot-dip zinc galvanized in accordance with IS 2629-1985, latest edition, or to an equivalent hot-dip galvanizing standard which produces equal or superior result.

3.4 After galvanizing, the nut and rod threading shall be such that the nut may be run the full length of the thread without the use of tools.

4 Tests

4.1 Apart from the tests indicated in the relevant referenced standard of steel , the stay set shall undergo following tests:

-Visual Inspection.

-Verification of dimensioned.

–Tensile strength: The stay set assemblies shall withstand a minimum tensile loads specified in Table 1.

-Bend test: The stay rod shall be bend-tested over a mandrel of 19 mm millimeter through an angle of 90 degrees at any point in the un-threaded section of the rod without fracture of the steel. Temperature of the test shall be 68 degrees Fahrenheit (22.5 deg Celsius).

5. Bid Documentation

5.1 The Bidder shall furnish with the Bid a complete description of the stay sets proposed to be supplied including, but not limited to, steel classification of base metal, detailed drawings showing shape, dimensions, and threading certified type test results as required by paragraph 4 herein, the identity of the proposed manufacturer, and manufacturers catalogue number, plus catalogue cuts. The technical data furnished shall be bound separately from the Bid Document.

Table 1

Ratings and Features

	HT Stay	LT Stay
Length of stay rod	2.4 m	1.8 m (6')
Diameter of stay rod	19 mm	16 mm
Ultimate tensile strength of stay rod and turn-buckle	4200 Kg/sq.cm	4200 kg/sq.cm
Minimum breaking load	10,454 kg	6,433 kg
Length of threaded portion	300 mm	300 mm
Thimble shape	Suitable for 7/10 SWG stay wire	Suitable for 7/12 SWG stay wire
Thimble section	18 SWG (min.)	18 SWG (min.)
Stay plate section	600×600×6mm	300×300×6mm
Eyebolt length	300 mm	300mm

Galvanization	IS: 2629-1985	IS: 2629-1985

SPECIFICATION – BRO-15

STRANDED STAY WIRE

1. Scope

This Specification covers the fabrication and supply of zinc-coated steel wire for use in overhead power line as stay wire ropes for line supports (poles).

2. Description of Strands

The steel strand shall be fabricated in accordance with B.S. 183 1972/ (1983) or an equivalent national or international standard. The wires shall be 45-ton quality fully galvanized by hot dip process to British Standards or equivalent.

The steel wire strand shall have a left-hand lay. The steel wires shall have no joint throughout the whole length. Strands shall be uniform and shall have no defects such as cracks, dust encapsulation or crevices. Further details are given in Table 1 herein.

3. Packing

The steel wire strand shall be furnished in reels holding approximately 300m (1000ft). Each reel shall have a weather-resistant tag securely attached showing the length, nominal diameter, number of individual wires, grade of the strand, and the class of zinc coating.

4. Bid Documentation

4.1 The Bidder shall furnish the following technical data with the Bid:

a) If the material to be offered is to be manufactured in accordance with the specified B.S. standard, full technical data for the material and the identification of the manufacturer.

b) If the material offered to be manufactured in accordance with an equivalent standard, two (2) clear copies of that standard shall be furnished in addition to the data required in (a) above.

All technical data furnished shall be bound separately from the Bids.

5. Tests

The testing of individual wires and complete conductor shall be in accordance with the nominated standards.

TABLE 1

Ratings and Features

Steel Wire Size (No. of wire/ SWG)	7/10	7/12
Grade	700	700
Steel quality	45 ton	45 ton
Diameter of Wires	3.25 mm	2.64 mm
Minimum Weight	450 kg/km	300 kg/km
Zinc coating on steel	According to B.S. 443(1982)	
Applicable Standard	B.S. 183 1972/(1983)	

SPECIFICATION

SILICON STEEL CORE TYPE DISTRIBUTION TRANSFORMER

1. Scope

These specifications cover the requirements of oil-immersed, naturally cooled single and three-phase distribution transformers suitable for outdoors installation on 11kV and 33 kV, 50 Hz distribution systems.

2. Service Condition

The transformers shall be designed and constructed for outdoor installation and operation under the following conditions:

Ambient temperature: -5°C to 45°C

Relative humidity: up to 95%

Altitude: up to 2000 m above the mean sea level

3. Standards and Quality Certification

3.1 The equipment specified in this Section of the Contract shall conform to the latest edition of the appropriate IEC specifications and/or other recognised international standards *equivalent to IEC Standards*. In particular:

IEC 60076	Power transformers
IEC 60137	Insulating Bushings for alternating voltages above 1 kV
IEC 60156	Insulating liquids-Determination of the breakdown voltage at power frequency-test method
IEC 60296	Specification for uninhibited mineral insulating oils for transformers and switchgear
IEC 60551	Determination of transformer and reactor sound levels
IEC 60616	Terminal and tapping materials for power transformer
IEC 60722	Guide to lightning and switching impulse testing of power transformers and reactors
IEC 60733	Determination of water in insulating oils.
IEC 5493	Protective coating of iron and steel structures against corrosion.

3.2 The manufacturer of the offered transformers must have been accredited with valid ISO 9000 quality certification with design in its scope of registration.

4. Description

4.1 Technical details are given in Table 1 to Table 3. The quantity of the transformers to be supplied shall be as given in the Price Schedule.

4.2 *Tank*

The tank shall be of welded construction and fabricated from mild 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. The tank cover shall be bolted on to the tank with weatherproof, hot-oil resistant, resilient gasket in between for complete oil tightness. Pressed-steel radiators shall be mounted on transformer-tanks of 100 kVA and higher rating transformers. The radiator shall be of pressed-steel of corrugated type design. Heat dissipation calculation in respect of the number, size and length of the radiators are to be satisfied by design calculation.

Each transformer shall be provided with a case of rigid construction, which shall be oil-tight and gas-tight. The thickness of all tank sides except the tank-bottom and cover shall not be less than 3.2 mm. The thickness of tank-bottom and cover shall not be less than 4.0 mm. The tank shall be capable of withstanding, without leakage or permanent deformation, a pressure 25% greater than the maximum operating pressure. The tank cover shall be bolted on to the main-tank. Each transformer shall be provided with earthing terminal with clamp type connector.

4.3 Painting

All sheet steel works shall be phosphated in accordance with the following procedure and in accordance with BS 2569 and BS 5493.

The tank body shall be sand/shot blasted to remove the welding scales. Oil, grease, dirt shall be thoroughly removed by emulsion cleaning. Rust and scale shall be removed by pickling with dilute acid followed by washing with running water, rinsing with slightly alkaline hot water and drying. After phosphating, thorough rinsing shall be carried out with clean water, followed by final rinsing with dilute dichromate solution and even drying. The phosphate coating shall be sealed by the application of two coats of stoving type zinc chromate primer. The first coat may be "flash dried" while the second coat shall be stoved. After application of the primer, two coats of finishing synthetic enamel paint shall be applied, each coat followed by stoving. Touch up shall be applied after completion of tests. The color for the finishing paint shall be light gray or as approved by Employer. The final finished thickness of paint film on steel shall not be less than *60* microns. Finished painted surface shall present aesthetically pleasing appearance free from runs and drips. A small quantity of finishing paint shall be supplied for minor touching up required at site.

4.4 *Core*

The transformer shall be of core type. The cores shall be constructed with prime core-material of interleaved grade non-aging, low loss, high permeability, grain oriented and cold rolled silicon steel laminations, properly treated after being sheared to remove any burrs and shall be re-annealed to remove any residual stresses. The steel shall be thin in lamination.

The yoke laminations shall be in single piece instead of pieces to reduce chances of introducing more air gaps in the core construction.

All steel sections used for the support of the core shall be thoroughly sand blasted after cutting, drilling and welding.

All laminations shall be properly insulated with the materials that will not deteriorate due to pressure and hot oil.

The core shall be rigidly clamped with positive locking device to ensure adequate mechanical strength. Core and coil assembly shall be capable of withstanding the vibrations and shock during transportation, installation, service and adequate provision shall be made to prevent movement of core and coil assembly relative to the tank during these conditions. The core shall be provided with lifting lugs suitable for lifting complete core and coil assembly of transformer.

Permissible Flux Density and Over Fluxing

Flux density at rated voltage and frequency shall not exceed 1.6 T. The no-load current at rated voltage and at 112.5% voltage shall not exceed the values given below with tolerance as indicated.

At 100% rated voltage	2% of rated full load current + 30% as tolerance.
At 112.5% rated voltage	max 4% of rated full load current

The bidder shall submit the design calculation in support of flux density and no-load current at 100% and 112.5% voltage along with drawings of core-steps, limb-diameter, window-height, limb-center, etc.

4.5 *Winding*

The design, construction and treatment of winding shall give proper consideration to all service factors. The winding shall be so designed that all coil assemblies are of identical voltage ratio and shall be interchangeable. All delta leads should be clamped tightly on to the special frame/bracket making pie (π) frame. The leads leading to the bushing terminals should be clamped to the horizontal support base of the pie frame so that vibration during short circuit is not passed on to the windings. The completed assembly of core and coils shall be dried in a vacuum sufficient to ensure elimination of air and moisture within the insulating structure. After the drying process, the assembly shall be immediately impregnated with dry oil to develop full electrical strength in the windings. The windings of the transformer shall be fabricated from **high conductivity E.C.Grade (A)** copper materials for 50 kVA and higher rating transformer, whereas it may be of **high conductivity E.C.Grade (A)** copper or aluminum for lower rating transformers.

Current Density

Current density for any part of the winding shall not exceed the following values:

Copper winding transformers	$\leq$ 2.8 amp/mm^2
Aluminum winding transformers	$\leq$ 1.5 amp/mm^2

4.6 *Oil Preservation System*

The transformers up to 25 kVA of voltage rating 11/0.4 kV and 11/0.23 kV shall be completely oil filled type. The transformers of higher ratings shall be provided with conservator. The conservator vessel shall have a capacity between highest and the lowest levels of not less than 7.5% of the total cold oil volume of the transformer.

Each conservator vessel shall be fitted with a sufficient-size breather in which silica-gel shall be used as the drying agent. Windows in the silica-gel breathers shall be sufficiently large enough to allow crystal color change to be easily observed from a distance of 6 m. The position of the silica gel breather shall be such that maintenance can be carried out without the need to de-energize the transformer.

4.7 *Tap Changer*

An externally - operated tap changer for transformers rated 100 kVA and above shall be furnished with each transformer, to be operated only when the transformer is de-energized. The tap changer shall include an operating handle, visible indication of tap position and means for locking the tap changer in any desired position. The locking device shall be arranged to prevent locking the tap changer in an off position. Mechanical means shall be provided for limiting the maximum and minimum travelling of the extreme tap positions to be at the maximum and minimum position of the tap changer.

4.8 *Insulating Oil*

All transformers shall be filled to the required level with a new, unused, clean, standard mineral oil in compliance with IEC 60296. Type tests certificate of oil being used shall be produced at the time of inspection.

4.9 *Bushings*

The bushings shall be made of homogeneous and well vitrified porcelain. The color of the insulator shall be brown and the surface shall have polished glaze.

The high voltage bushings shall have clamp-type terminal lugs suitable for terminating 30-120 mm^2 stranded conductor.

The low voltage bushings shall have clamp-type terminal lugs suitable for terminating aluminum conductor compatible to the kVA rating (with 100% factor of safety) of the transformer.

The low voltage neutral bushings shall include a clamp-type terminal lug for terminating together an earth-wire and an aluminium conductor of neutral circuit of the LV system.

4.10 *Temperature rise*

Maximum oil-temperature rise and maximum winding-temperature rise above ambient-temperature of 45°C when carrying maximum continuous rated current shall not exceed the following;

a. In oil by thermometer 50°C

b. In winding by resistance 55°C

The temperature rise of the insulating oil shall be measured near the top of the main tank.

4.11 *Gaskets*

All sealing washers / Gaskets shall be made of oil and heat resistance nitrile / neoprene/ synthetic rubber bonded with cork gasket. Gasket made with natural rubber and cork shall not be acceptable. The thickness of the tank cover gasket shall not be less than 6 mm before compression.

4.12 *Clearances*

Minimum electrical clearances between the phases and phase to earth shall not be less than the values given below:

Voltage	Medium	Phase to phase, mm	Phase to earth, mm
33 kV	Air	330	320
11 kV	Air	255	205
400 V	Air	75	55

The clearances shall be maintained by fixing the bimetallic connectors in position.

4.13 *Accessories*

The following accessories shall be provided with each transformer.

- Lower oil filter and drain valve
- Liquid level gauge
- Lifting Lug
- Name plate
- Tank grounding terminal connector suitable for grounding cable
- Pressure relief device of explosion-vent type for 25 kVA and higher ratings

4.14 *Rating and Terminal Marking Plate*

Each transformer shall be provided with a non detachable rating and terminal marking plate of weather proof material, preferably of brass fitted in a visible position mentioning the following information:

- Guaranteed No Load Loss and Load loss
- Details of rating (rated output, voltage, phases, frequency etc.)
- Cooling
- Connection and vector diagram
- Weights (Total, weight of core, weight of winding and weight of oil)
- Name of manufacturer and year of manufacture
- Standards of manufacture
- Physical dimension of the transformer
- Any other relevant information

The face of the transformer body shall display the words "Property of Nepal Electricity Authority" on two sides written in indelible paint.

5 Tests

Tests shall be performed in accordance with these specifications in line with relevant IEC standards.

5.1 Type Tests

The Bidder shall submit, along with the Bid, type test reports (detail) on the following tests performed on identical units.

- Temperature rise tests
- Dielectric Type test
  i) Impulse voltage tests
  ii) Separate source AC withstand voltage test
- **Short circuit test.**

The type test certificates shall be furnished for each type of transformer offered which, in addition to other required data, shall show the actual no-load and full-load losses of the transformer at rated load. For the purpose of evaluation, the higher values of no-load and load losses shall be considered from the values guaranteed by the Bidder and the values given in the type test reports. The test of the transformer shall have been conducted by an accredited independent laboratory.

If the type test report for identical unit of transformer is not available, the type test report of similar type transformer may be considered acceptable during bid evaluation, provided, the bidder shall upon award of the Contract and prior to mass production of transformer, undertake to carry out type test on identical unit of each capacity of transformer in an independent laboratory accredited by International AcBROitation Corporation (ILAC) of International AcBROitation Forum (IAF) or other reputed AcBROitation Agencies in the

presence of representative appointed by Nepal Electricity Authority at no extra cost to the Client/Employer. In this case, for purpose of evaluation, the values of no-load and load losses shall be considered from the values guaranteed by the bidder.

5.2 Routine Tests

The following tests shall be performed on each unit of transformer by the manufacturer before dispatch and submit the test-reports to the Employer.

- Applied voltage test
- Induced voltage test
- No load loss and excitation current test
- Impedance voltage and load loss tests
- Winding resistance measurement
- Ratio tests
- Polarity and phase relation tests
- Tank leakage tests
- Insulation resistance tests
- Separate source power frequency voltage withstand test
- Dielectric breakdown strength of oil

The bidders are required to furnish the details of testing facilities available at the manufacturer's premises for conducting the tests listed above in 5.2

5.3 Tests to be witnessed by the Employer

To ensure about the quality of transformers, the inspection shall be carried out by the NEA's representative and/or by third party in following stage:

Pre dispatch inspection will be carried out at finished stage i.e. transformers are fully assembled and are ready for dispatch. As and when the transformers are ready for dispatch, an offer intimating about the readiness of transformers, for pre dispatch inspection for carrying out routine tests (specified in Clause 5.2) on minimum 20% quantity of offered lot shall be sent by the supplier along with Routine Test Certificates as specified in Clause 5.2.

In addition to above the Purchaser's representative(s) shall also witness at the manufacturer's plant (a) temperature-rise test, (b) dielectric type-test for each type (and rating) of transformer on at least 2 (two) % of each type (and rating) of transformer to be

procured. The sample shall be selected by the Employer's representative(s) from the complete-lot ready for dispatch. No additional costs shall be paid for such tests.

The calibration certificate of all the measuring instruments e.g., Wattmeter, Voltmeter, manometer, CT & PT and other instrument (Calibrated and sealed not exceeding one year at the time of inspection) shall be produced to the Inspecting officer at the time of Pre-dispatch Inspection and Testing. In case of any dispute regarding calibration of instruments, instruments will be sealed and signed by the representative of the "Supplier" and "Purchaser" and will be sent to an institute/Laboratory of repute for calibration at the cost of "Supplier".

5.4 Testing after Delivery of Goods:

The Supplier shall carry-out [which the Purchaser's representative(s) shall witness] the following tests in a laboratory owned or nominated by the Employer after delivery in Nepal which shall be the Final Test for acceptance of Transformers.

a) Temperature rise test on at least one transformer of each rating.

b) No Load Loss and Load Loss test on 100 (hundred) % of transformer

Cost for such tests shall be quoted in the Price Schedule and shall be paid by the Supplier.

5.5 Dispute on quality of Goods:

The purchaser has all the rights to conduct the test including type tests, at his own cost by an independent agency whenever there is dispute regarding the quality of supply or interpretation of test results. In the event of failure of transformers in such tests, the expenses incurred in testing shall be to the supplier's account as already mentioned above in case of Testing after Delivery of Goods.

6. Evaluation

6.1 **The transformer no-load and load losses shall not exceed the following guaranteed values. Any transformer shall be rejected if losses exceed the following guaranteed value by an amount in excess of the following (as prescribed in IEC 60076, Power transformers):**

Total losses: 10%
Component losses: 15% (unless the total loss exceeds 10 %)

For 11/0.4 /.23 kV

S.N.	*Rating*	*No Load Loss (Watts)*	*Load Loss (Watts)*
1	10 kVA, 1-ph	45	225

2	15 kVA, 1-ph	62	300
3	25 kVA, 3-ph	75	460
4	50 kVA, 3-ph	120	750
5	100 kVA, 3-ph	220	1210
6	200 kVA, 3-ph	365	2100
7	300 kVA, 3-ph	550	3000

For 33/0.4/0 .23 kV

S.N.	***Rating***	***No Load Loss (watts)***	***Load Loss (watts)***
1	50 kVA, 3-ph	140	800
2	100 kVA, 3-ph	290	1800

6.2 Transformers shall be evaluated for the loss values (no-load losses and load losses) during bid evaluation based on the following loss capitalization formula:

$P_E = P_b + K_L L_L + K_{NL} N_{LN}$

Where,

P_E = Evaluated price

P_b = Bid price

K_{NL} =Value of no-load loss

K_L = Value of load loss

L_L = Guaranteed load losses at rated current

L_{NL}= Guaranteed no-load losses.

The transformer losses shall be capitalized as follows:

K_{NL} =Value of no-load loss= USD 4,684/ kW

K_L = Value of load loss= USD 618/ kW

6.3 Penalty for Excessive losses: During testing, if it is found that the actual measured losses are more than the values guaranteed by the **bidder (provided that they are within the limit specified in Clause 6.1 above)**, a penalty shall be recovered from the bidder at double the loss capitalization rates arrived at clause 6.2 above. For fraction of a kW, proportionate penalty will be recovered.

6.4 For the purpose of this Specification type tests are defined as tests performed on similar transformers of the same general arrangements, same voltage and same mechanical and electrical characteristics.

If the type test report for identical unit of transformer is not available, the type test report of similar type transformer may be considered acceptable during bid evaluation, provided, the bidder shall upon award of the Contract and prior to mass production of transformer, undertake to carry out type test on identical unit of each capacity of transformer in an independent laboratory accredited by International Accreditation Corporation (ILAC) of International Accreditation Forum (IAF) or other reputed Accreditation Agencies in the presence of representative appointed by Nepal Electricity Authority at no extra cost to the Client/Employer. In this case, for purpose of evaluation, the values of no-load and load losses shall be considered from the values guaranteed by the bidder.

6.5 If at any stage it is established that the type test report submitted by the bidder is not satisfactory, discrepant or ambiguous, then NEA reserves the right to ask the bidder/supplier to conduct the type test on the rating/s of transformers chosen by the NEA in the presence of their representative at reputed national/international testing laboratory prior to its mass production *and/or* dispatch. The costs involved in organizing and conducting such tests shall be borne by the bidder/supplier.

7. Bid Documentation

7.1 The Bidder shall furnish with the Bid, the following documentation:

a) One (1) clear copy of the IEC standards governing fabrication and testing of the transformers.

b) Two (2) clear certified copies of type tests carried out for each rating as required by the governing IEC standard and the specifications.

c) Two (2) copies of certified outline drawings for each kVA rating showing dimensions, arrangements, and locations of all parts.

d) A clause-by-clause commentary on the specification, specifying compliance or deviations, if any.

RATINGS AND FEATURE FOR DISTRIBUTION TRANSFORMER

TABLE 1

Type		Three-phase, 11/0.4 kV
Rated power		As specified in the Price Schedule
Rated voltage	- Primary	11kV
	- Secondary	400/230V
Max system voltage	- Primary	12kV
	- Secondary	440V
Rated Frequency		50Hz
Connection	- Primary	Delta
	- Secondary	Grd. Wye
Cooling System		ONAN
Vector group		Dyn 11
Rated impedance voltage		3.5 - 4.5%
BIL for windings and bushings for primary side		75kV
Withstand voltage, 50 Hz, 60 Sec.		
	- Primary	28kV
	- Secondary	3kV
No load tap changer		+/- 2.5%, +/- 5% on HV side (for 100 kVA and above)
Mounting		Platform
Insulation levels (IEC) 76		LI 75 AC 28/AC 3
Insulation temperature class (IEC 76)		A
Maximum allowable noise level at 3 metre hemispherical radius		<44 dB
Applicable standard		These Specifications and IEC

TABLE 2

Type		Three-phase, 33/0.4 kV
Rated power		As specified in the Price Schedule
Rated voltage	- Primary	33kV
	- Secondary	400/230V
Max system voltage	- Primary	36 kV
	- Secondary	440V
Rated Frequency		50Hz
Connection	- Primary	Delta
	- Secondary	Grd.Wye
Cooling System		ONAN
Vector group		Dyn 11
Rated impedance voltage		3.5 - 4.5%
BIL for windings and bushings for primary side		170 kV
Withstand voltage, 50 Hz, 60 Sec.		
	- Primary	70 kV
	- Secondary	3 kV
No load tap changer		+/- 2.5%, +/- 5% on HV side (For 100 kVA and above)
Mounting		Platform
Insulation levels (IEC) 76		LI 170 AC 70/AC 3
Insulation temperature class (IEC 76)		A
Maximum allowable noise level at 3 metre hemispherical radius		<44 dB
Applicable standard		These Specifications and IEC

TABLE 3

Type		Single-phase, 11/0.23 kV
Rated power		As specified in the Price Schedule
Rated voltage	- Primary	11kV
	- Secondary	230V
Max system voltage	- Primary	12kV
	- Secondary	250V
Rated Frequency		50Hz
Cooling System		ONAN
Rated impedance voltage		2.5 - 4%
BIL for windings and bushings for primary side		75kV
Withstand voltage, 50 Hz, 60 Sec.		
	- Primary	28kV
	- Secondary	3kV
Mounting		Pole
Insulation levels (IEC) 76		LI 75 AC 28/AC 3
Insulation temperature class (IEC 76)		A
Maximum allowable noise level at 3 metre hemispherical radius		<44 dB
Applicable standard		These Specifications and IEC

SPECIFICATION

SURGE ARRESTERS

1. Scope

This specification covers the manufacture, testing and supply of distribution type polymer-housed surge arresters commonly installed on overhead power lines.

2. Description

2.1 The surge arresters shall be suitable for use on a three-phase, wye-connected, uni-grounded (solid grounding), 33 kV,11 kV, 50 Hz distribution circuits at an altitude up to 2000 meters, and ambient temperatures ranging from -5 deg. C to 45 deg. C.

2.2 The surge arrester housing shall be of polymer type, manufactured using industry recognized polymeric material having superior insulating properties necessary for out door installations. The housing shall display in an indelible manner: Arrester type, voltage rating, and year of manufacture.

2.3 The surge arresters shall be of **gapless metal-oxide type.**

2.4 The surge arresters shall have line terminals and ground lead terminals accommodating copper or aluminium conductor sizes from 13.3 mm sq. (6 AWG) through 53.49mm sq. (1/) AWG). Each arrester shall be provided with nut and wire clamp as the line terminal and ground terminal accessory hardware.

2.5 The surge arresters shall be furnished with necessary mounting bracket and accessories necessary for steel channel (100x50x50x6mm) cross-arm mounting.

2.6 The surge arresters must be manufactured by a company approved to quality standard ISO 9001. The ISO 9001 certification number, the name of the authorized approving authority with the contact address and telephone and fax numbers shall also be stated. The Bidder shall enclose a verified copy of the ISO 9001 certificate with the bid.

2.7 The surge arresters shall have the following characteristics:

		11 kV	**33 kV**
a)	Voltage rating (Ur),Vrms	9	30
b)	Nominal system voltage, kVrms	11	33
c)	Maximum system voltage, kVrms	12	36
d)	System frequency, Hz	50	50
e)	Nominal discharge current, kA	10	10

f)	Creepage distance (terminal to base), mm	390	1000
g)	Minimum power-frequency withstand		
	Wet, kVrms	50	90
	Dry, kVrms	70	95
h)	Impulse withstand (1.2/50µsec), kVcrest	95	170
i)	Maximum discharge (residual) voltage		
	at 10kA lighting impulse current, kVcrest	29	90
j)	Steep current residual voltage, kVcrest	32	99
k)	Pressure relief class	B	B
	High current	for 0.2s	20 kA
	Low current	for 0.5s	0.8 kA

2.8 The surge arresters shall be manufactured and tested in accordance with IEC 60099-4 (latest revision).

3. Quantity

3.1 The quantity of the arresters to be under this Bid shall be as given in the Price Schedule.

4. Bid Documentation

4.1 The Bidder shall have provided with the Bid two (2) clear copies of the governing test specification and a full description and list of electrical and protective characteristics of the surge arresters offered. The Bidder shall have to provide two (2) clear copies of certified type-set results of the surge arresters offered.

SPECIFICATION

DISTRIBUTION CUTOUT

1 Scope

This Specification covers the testing and supply of open distribution cutouts commonly used on the primary side of 33 kV, 11 kV distribution transformers as protective device.

2. Description

2.1 The distribution cutouts shall be suitable for use on thee-phase, wye-connected, uni-grounded, 50 Hz distribution circuits at an altitude up to 2000 meters.

2.2 The distribution cutout shall be tested in full compliance with ANSI C 37.41-1981, ANSI C 37.42 or IEC 282-2.

2.3 The distribution cutout shall incorporate wet-process glazed porcelain insulators. The insulator shall display in an indelible manner: manufacture, type and voltage rating.

2.4 The fuse holder shall accommodate a non-expendable cap or an expendable cap determined by interrupting rating.

2.5 The cutout shall be furnished with a galvanized steel mounting bracket which may be adapted for steel channel (100x50x50x6mm) cross arm mounting.

2.6 The cutout shall have clamp type terminals to accept copper or aluminum conductors ranging from 25mm2 to 150mm2.

2.7 The Cut outs must be manufactured by a company approved to quality standard ISO 9001. The ISO 9001 certification number, the name of the authorized approving authority with the contact address and telephone and fax numbers shall also be stated. The Bidder shall enclose a verified copy of the ISO 9001 certificate with the bid.

3. Ratings

3.1 The distribution cutout shall have the following electrical characteristics:

			11 kV	**33 kV**
a)	System voltage	kVrms	11	33
b)	Design rating	kVrms	12	36
c)	Minimum power frequency withstand:			
	Dry	kVrms	35	90
	Wet	kVrms	30	70

d)	Impulse withstand	kVcrest	95	170
e)	Interrupting capacity	kA	10	30
f)	Creepage distance (Leakage to ground)	mm	200	380

3.2 The distribution cutout shall have 100 Ampere fuse holder. It shall have the capability of interchanging fuse holders from **100 Ampere to 300 Ampere capacities**.

4. General Requirements/Constructional Details

4.1 The typical constructional details of the fuse cutout are as follows:

a. Copper current path;

b. Copper arc shortening rod;

c. Bird-proofed one-piece solid porcelain insulator;

d. **Tinned plated bronze terminals** for use with copper or aluminum conductor;

e. Two-place locking to prevent side movement of hood, contacts or hooks;

f. One piece stainless steel channel;

g. Stainless steel backup spring to maintain contact pressure;

h. Silver to silver contacts;

i. Galvanized steel hooks for load break tool;

j. Cast bronze top tube casting and pull ring;

k. High strength fiberglass fuse tube coated with ultra violet inhibitor;

l. Hot stick hole in trunnion casting for hot stick work;

m. Cast bronze lower tube casting;

n. Stainless steel fuse link ejector and spring insures proper toggle action;

o. Fuse holder toggle latch limits tension of fuse link;

p. Cast bronze hinge for corrosion resistance;

q. Large nut to fasten fuse link without breaking strands;

4.2 The design of cutout shall be such that the fuse holder can be interchanged with those of other manufacturer.

5. Bid Documentation

4.1 The Bidder shall provide with the Bid literature/catalogue giving a full description of the distribution cutouts and the fuse holders, including their operational details.

4.2 The Bidder shall provide a clear copy of certified type test results of the distribution cutouts offered.

6. Quantity

5.1 The quantity shall be as specified in the Price Schedule.

SPECIFICATION

FUSE LINK

1. Scope

This Specification covers the supply of button head fuse links commonly used in the protection of distribution transformers.

2. Description

2.1 The button-head fuse link shall be fabricated in full compliance with American National Standard specification ANSI C 37.42-1981, or latest revision thereof or any other national or international standards that ensures at least a substantially equal quality to the standard mentioned above, will also be acceptable.

2.2 The fuse link shall have fast characteristics and shall be suitable for protection of distribution transformers.

2.3 The fuse link shall be supplied in accordance with the type and ratings shown in the Bid package.

3. Bid Documentation

3.1 The Bidder shall furnish two (2) clear copies of governing standards for fabrication and testing of fuse links.

3.2 The Bidder shall furnish two (2) clear certified copies of catalogue of fuse links.

3.3 The Bidder shall furnish a clause-by-clause commentary on specification, specifying compliance and deviations, if any.

3.4 The Bidder shall also furnish with the Bid two (2) copies of the following data with respect to the fuse links furnished:

a) Time-Current (TC) characteristics curves at 30oC, including minimum melting time and total clearing time.

b) Preloading adjustment factors or curves.

c) Ambient temperature adjustment factors or curves.

3.5 All data, drawings, catalogues and other technical documents shall be bound separately from the Bid documents.

SPECIFICATION

MOULDED CASE CIRCUIT BREAKERS

1. Scope

This specification covers the design, testing, and supply of moulded-case circuit breakers (MCCBs).

2. Description

2.1 The circuit breaker shall be fabricated and tested in accordance with IEC 60947 or latest revision, or an equivalent national standard and shall be suitable for connection to 400/230 volt, 3 -phase, 4 wire, un-grounded circuits.

2.2 The circuit breakers shall be rated in accordance with the parameters shown in Table 1 contained herein.

2.3 The circuit breakers shall be completely enclosed in a moulded case and shall be factory sealed. The circuit breaker shall have a quick make, quick break, over current switching mechanism that is mechanically trip-free for simultaneous tripping of all poles. Tripping due to overload or short circuit shall be clearly indicated by the position of the handle. The ON and OFF positions shall be clearly marked on the breaker case.

2.4 The circuit breaker shall be of inverse time and instantaneous trip type. The trip device shall be of thermal-magnetic or static release type.

2.5 The circuit breaker shall be provided with terminal connection of the screw-type or bus bar type as specified in Table 1. For circuit breakers with bus bar connection certain additional hardware shall be furnished with each circuit breaker as specified in Table 2 herein.

2.6 The circuit breakers shall be suitable for mounting in outdoor distribution panels and each breaker shall be furnished complete with one (1) set of bolt fastenings, complete with nuts and lock washers of the correct diameter for the mounting hole and of a length equal to the depth of the circuit breaker body plus approximately two (2) centimeters.

2.7 The circuit breakers shall have line load reversibility feature.

2.8 The MCCBs must be manufactured by a company approved to quality standard ISO 9001.(including design). The ISO 9001 certification number, the name of the authorized approving authority with the contact address and telephone and fax numbers shall also be stated. The Bidder shall enclose a valid copy of the ISO 9001 certificate with the bid.

3. Supply

The circuit breaker shall be supplied in accordance with the ratings shown in Table 1, the ancillary fittings shown in Table 2, and the quantities shown in the Bid packages.

4. Bid Documentation

The Bidder shall supply with the Bid the following documentation:

a) Two (2) clear copies of the governing standard.

b) Two (2) clear copies certified type test results as required by the governing standard.

c) Two (2) copies of outline drawings for each breaker rating.

d) Two (2) copies of time - current characteristic trip curves for each breaker rating.

TABLE 1

MOULDED-CASE CIRCUIT BREAKER

RATING	
Rated Voltage	600 Volt
Number of Poles	3
Ampere Ratings	as per Price Schedule
Interrupting Capability	(IEC category P2)
Breaker rating:	50 to 100 Amp: 25 KA minimum (I_{cs})
	100 to 300 Amps: 35 KA minimum (I_{cs})
Impulse withstand voltage, KV	8

Breaker rated 50 Amperes through 200 amperes shall be furnished with thermal magnetic or static trip.

Breaker rated 300 Amperes through 500 amperes shall be furnished with Thermal -adjustable magnetic or static trip.

Breaker rated 50 to 100 Amperes shall accept conductors ranging from 15 mm^2 to 50 mm^2.

Breaker rated 160 to 300 amperes shall accept conductors ranging from 15 mm^2 to 125 mm^2.

Breakers rated 160 and 300 amperes shall possess busbar-type terminals. Refer to Table 2.

TABLE 2

CIRCUIT BREAKERS W/BUSBAR TERMINALS

BREAKER RATING	ADDITIONAL HARDWARE TO BE FURNISHED WITH EACH BREAKER
160 AMPERES	3 each 1-hole compression terminal for 75 mm square conductor
300 AMPERE	3 each 1-hole compression terminal for 150 mm square conductor

Notes:

1. All conductors will be stranded Aluminum
1. All breaker terminals, compression terminals, compression terminals, stacking spacers, and bolting shall be compatible with Aluminum conductors.

SPECIFICATION

DISTRIBUTION PANEL BOARD

1. Scope

1.1 This specification covers the fabrication and supply of distribution panel boards.

2. General

2.1 The panel board will be pole-mounted and used in conjunction with pole-mounted distribution transformers to house circuit breakers feeding 400/300 Volt circuits. External cabling will be provided by others.

2.2 The panel board shall be rectangular in shape with an entrance door in the front of the panel board. The panel board shall be equipped with interior stand-offs suitable for mounting moulded-case circuit breakers and for supporting cables. The panel board will be fixed to the pole by exterior mounting brackets attached to the back of the panel board. Details of these components shall be as specified in the following text and illustrated in the conceptual drawing attached hereto.

2.3 The panel board shall be fabricated to prevent ingress of moisture due to rainfall and dripping. The panel board shall be provided with means for natural ventilation.

3. Description

3.1 Material

a) The panel board case, door, and pole mounting brackets shall be fabricated of galvanized steel sheet of minimum 2mm in thickness.

b) The interior stand-offs shall be fabricated of steel sheet of sufficient thickness to support installed circuit breaker and cables without lateral movements.

3.2 Construction

a) The panel board case and all interior and exterior attachment shall be spot-welded. All welding shall be of the highest quality. The panel boards shall be formed and welded square, and all attachments to the interior and exterior surfaces shall be welded square and perpendicular to the plane attached.

b) The panel board shall be so constructed as to be water tight from blowing of free-falling rain. There shall be no apertures in the panel board case other than those provided for the entrance door, cable fittings, or ventilation. The top extension and bottom shall be so formed to provide a drip edge and prevent water from flowing on the respective under-surfaces.

c) All individual pieces of metal shall be edge finished prior to assembly to provide surfaces and edges with are free from sharp points and edges. After welding in place, all welds shall be finished to smooth condition.

3.3 Panel Board Front

a) The front panel shall be fabricated as a separate piece containing the panel board door and doorframe. The front shall be attached to the panel board housing by suitable bolting arrangements to provide a watertight and dust tight seal at the perimeter.

b) The door shall be equipped with a gaskets, removable door, door-handle lock, and suitable hinges.

c) The door and panel frame shall be so fabricated to provide an integrated structure which is warp-resistant and which will maintain dust-tight and watertight seal.

d) Gasket material shall be heat-resistant and shall retain its resilience over time to precluded degradation of dust-tight and watertight properties.

e) The insert able (and removable) door handle shall provide a door and locking function. The handle shall be insulated.

f) The door hinge may be continuous type or separate hinge units. However, the type of hinge furnished must accommodate, and not degrade the dust-tight and watertight characteristics and must provide adequate door alignment and support over time.

3.4 Circuit Breaker Standoffs

a) The stand offs shall be shaped and dimensioned to accommodate the MCCB as required by Bid Packages.

b) The standoffs shall be precisely located.

3.5 Cable Stand-offs

a) The cable stand-offs shall be properly shaped and dimensioned.

b) The standoff shall have the metal edges contoured and smoothed to prevent abrasion of applied cable serving.

c) The standoff shall be located within the panel board to make allowance for cable bending radii and the location of other components.

3.6 Bus bars

a) The neutral and phase bus bars shall consist of copper bar insulated from the panel board by 600 V porcelain insulators. The copper bus shall be properly dimensioned.

b) The bus bars shall be located within the panel board to provide adequate clearance for the installation and correct functioning of all items.

c) If it is required to drill or penetrate the panel board back to install 600 V insulators, the outside of the panel board shall be permanently sealed over the attachment to retain water-tightness.

3.7 Cable Entrance Fittings and Knockouts

a) Knockouts for cable entrance fittings (bushings) shall be provided in the bottom of the panel board.

b) All necessary cable entrance fittings shall be supplied for proper connections of all circuits for fulfill the requirement of the Bid Package. The fittings shall be designed to be suitable for exposed cables entering the panel board from below and shall secure the cable with inserts to prevent lateral and longitudinal movement of the cables.

c) The fittings shall be threaded multi-piece construction which when installed securely locks the fittings to the panel board metal. The fittings may be of metal or polymer material. Metal fittings shall be galvanized or plated as appropriate. The fitting inserts may be single or multi pieces and shall be of a material sufficiently elastic and resilient to securely grip the PVC cable sheath without damage. The fitting components shall enable capture of the inserts to preclude insert creep and fallout due to clamping pressure.

3.8 Ventilation

a) The panel board shall be provided with apertures for natural draft ventilation in the panel board bottom and in the top overhang.

b) The ventilation apertures shall be covered with bronze screen materials of a mesh sufficiently shall to preclude passage of small insects. The edges of the bronze screening shall be surely fastened to the panel board by means of soldering or epoxy adhesive. The mesh shall be protected during panel board fittings to preclude clogging of mesh openings by finishing materials.

3.9 Pole Mounting Bracket

The panel board shall be provided with two (2) pole mounting brackets. The size of poles will be confirmed by NEA after the order is placed.

3.10 Grounding Stud

a) The panel board shall be provided with a brass-grounding stud located in an approved location.

b) The grounding stud shall be fitted to the panel board to insure low resistivity and water tightness of the installation.

c) The grounding stud shall be complete with pressure washer, lock washer, and nuts.

3.11 Finish

a) After fabrication, the panel board shall be thoroughly cleaned of all dirt, grease, mill scale, and weld slag on all interior and exterior surfaces and all surfaces of all component parts, and one (1) coat of red oxide metal priming paint shall be thoroughly applied. Paint colour of the two (2) finish coats of paints shall be of light grey. The finish coats shall be of oil based or epoxy paint.

b) The bronzed screen ventilation holes, working surfaces of door hinge and door lock, and outside face of grounding stud shall be free of all finishing materials.

4. Bid Documentation

The Bidder shall provide with the Bid the following items of documentation:

a) Two (2) copies of certified fabrication drawings showing all views, section, and dimensions of individual components and assembled panel board.

b) Complete description of all materials to be used, including cable entrance fittings and finishing materials.

c) Identification of proposed manufacturer.

SPECIFICATION

DISCONNECT SWITCH

1. Scope

This Specification covers the manufacture, testing and supply of single-pole, pole mounted disconnect switch suitable for double cross arm mounting commonly used in overhead electric power lines.

2. Description

2.1 The manufacturer of Disconnect Switches must have been accredited with IS0 9001 including design quality certification.

2.2 The switch assembly shall be fabricated and tested in accordance with IEC: 265-1 (1988), IEC: 529 (1989) and IEC: 60-1 (1989), latest revision thereof or any other national or international standards that ensures at least a substantially equal quality to the standard mentioned above, will also be acceptable.

2.3 The switch base shall be rugged and formed steel channel with holes and slots to adapt the switch to various mounting configurations. The switch shall be furnished with straps and hardware for steel cross arm mounting.

2.4 The switch shall have a silver-plated copper switch-blade. The switchblade shall incorporate a positive locking latch and a large pulling eye and pry-out mechanism.

2.5 The switch shall include tin-plated connector clamps that accommodate conductors from 25 sq. mm. to 100 sq. mm.

2.6 The electrical characteristics of the switch shall be as follows:

	11kV	**33kV**
Rated maximum voltage	12 kV	36 kV
Nominal voltage	11 kV	33 kV
Rated frequency	50 Hz	50 Hz
Rated normal current	400 A	800 A
Momentary current	40 kA	40 kA

Rated short circuit making current	25 kA	25kA
Impulse withstand voltage	95 kV	170
Min. power frequency withstand voltage		
Dry	35 kV	90
Wet	30 kV	70

3. Tests

The switch shall be tested in accordance with the relevant provisions of the governing standard.

4. Bid Documentation

4.1 The Bidder shall furnish two (2) clear copies of governing standards for fabrication and testing of switch and two (2) clear copies of all other relevant standards.

4.2 The Bidder shall furnish two (2) clear certified copies of all type tests of switch offered as required by the governing standard.

4.3 The Bidder shall furnish two (2) clear certified copies of catalogue and outline drawings for each type of switch showing dimensions, arrangements and name and location of all Parts.

4.4 The Bidder shall furnish a clause-by-clause commentary on specification, specifying compliance and deviations, if any.

4.5 All data, drawings, catalogues and other technical documents shall be bound separately from the Bid documents.

SPECIFICATION
PVC - INSULATED CABLE

1. Scope

This Specification covers the manufacture and supply of 600/1000 Volt, PVC-insulated, 4 core stranded aluminum power cable.

2. Description

2.1 The electric cable shall be manufactured and tested in full compliance with British Standards BS 6346:1987 or latest revision thereof, or any other national or international standards that ensures at least a substantially equal quality to the standard mentioned above, will also be acceptable.

2.2 The cable shall be multi-conductor, stranded aluminum with sizes as specified in the Price Schedule.

2.3 The conductor insulation shall be extruded PVC compound and shall be rated 600/1000 Volt. The insulation shall be colored red, yellow, blue, or black.

2.4 The cable shall be un-armored and shall have an over sheath of extruded PVC

2.5 The PVC cables must be manufactured by a company approved to quality standard ISO 9001 or ISO 9002. The ISO certification number, the name of the authorized approving authority with the contact address and telephone and fax numbers shall also be stated. The Bidder shall enclose a verified copy of the ISO certificate with the bid

3. Tests

3.1 The routine tests of the cable shall be done at manufacturer's plant in accordance with BS: 6346:1987 or other equivalent national or international standards including following test.

- Visual examination
- Construction Test
- Spark test on core
- Spark test on over sheath
- Voltage test on completed cable
- Insulation Resistance Test.

4. Packaging

4.1 Each reel of conductor furnished shall contain only one (1) length of cable.

4.2 The cable drum shall be made of steel suitably protected against corrosion. Protective external lagging of sufficient thickness shall be provided and fitted closely on the reels. Binder consisting of steel straps shall be provided over the external laggings. The drum shall be new and sufficiently rugged in construction to withstand ocean shipping, road

transport, several loading and unloading, storage in tropics, hauling and field erection of cables without distortion or disintegration.

4.3 All reels shall be legibly marked in paint with the following information:

a) Size of cable
b) Color of insulation
c) Length in meters
d) Net weight of cable

5. Bid Documentation

5.1 The Bidder shall provide with the Bid two (2) clear copies of the Standard governing manufacturer of the cable and two (2) clear copies of all other relevant standards referenced therein.

5.2 The Bidder shall provide certified type test results of all types of cables as required by governing standards.

5.3 The Bidder shall provide complete description, catalogue and certified drawings of all types of cables.

5.4 A clause-by-clause commentary on specification, specifying compliance and deviations, if any.

5.5 All data, drawings, catalogues and other technical documents shall be bound separately from the Bid documents.

SPECIFICATION

STEEL TUBULAR POLE

1. Scope

1.1 This Specification covers the design, fabrication, testing and supply of tubular steel poles commonly used in overhead electric lines.

2. General

The steel pole shall be fabricated in several lengths and strengths as specified in Table 1 contained herein.

2.1 The steel tubular poles must be manufactured b y a company approved to quality standard ISO 9001:2000. The ISO 9001 certification number, the name of the authorized approving authority with the contact address and telephone and fax numbers shall also be stated. The Bidder shall enclose a copy of the ISO 9001 certificate with the bid.

3. Description

3.1 The steel poles shall be of swaged design and shall consist of three (3) separate lengths of steel tubing swaged at two joints to fabricate the poles. However, there are some numbers of poles as mentioned in the price and delivery schedule which shall be of folding type. The quantities of such folding poles shall be intimated at the time of contract.

3.2 The steel tubing used in pole fabrication shall be of steel of any approved process possessing a minimum tensile strength of 42 Kg/sq. mm and a chemical composition of not more than 0.06% sculpture and not more than 0.06% phosphorous.

3.3 The tubing diameter and tubing wall thickness shown in Table 1 for each length of pole are the minimum size to be used in fabricating each length of pole. It shall be the responsibility of the Bidder to determine the adequacy of the component tubing shown for the load to be sustained. However, in no case the tubing diameter and wall thickness for any component tube be less than the value shown in Table 1.

3.4 Tubular poles shall be made of welded tubes, swagged and joined together. The upper edge of each joint shall be chamfered at an angle of about 45-degree. The steel poles shall be composed of three sections of diminishing diameters and minimum diameter thickness and lengths of pole shall be as shown in Table 1.

3.5 All tubes forming parts of the above supports shall be made from hot insulated seamless or continuously welded steel in accordance with BS 6323 or equivalent applicable Standards.

3.6 The entire section of the poles including the base plate shall be fully galvanized with minimum coating of weight not less than 460-gm/-sq. m internally and externally. Cap of the pole should be galvanized .

3.7 Each pole shall be provided with a steel top plate 3-mm minimum thickness welded to the end of the section. The top plate shall not project beyond the perimeter of the top section. Each pole shall also be provided with a welded base plate welded to the bottom of the pole.

3.8 The pole shall, be drilled in accordance with the drilling patterns as defined in the Figure. All the holes shall be of 18 mm dia. However, the manufacturer must get approval of the drilling pattern before manufacturing the poles. Each pole shall be marked with the appropriate length as shown in Figure.

3.9 The folding type of poles shall be fabricated in such a way that the section pieces can be carried to the site and fitted on the site itself. The pole section on top shall have a flange and the section under it shall overlap to a length of 25 cm as shown in the diagram. The poles shall be drilled in such a way that the section in top could be securely fixed the section under it by two bolts of 5/8" x 7" at 90 degree each other. Two such joints form a complete pole of three sections as shown in Fig 2 and 3.

3.10 The size of the base plate shall be as per governing standard.

4. Tolerance

4.1 The following tolerances shall be maintained:

a) Negative tolerance on diameter: Not Applicable
b) Negative tolerance on weight: Not Applicable
c) Negative tolerance thickness: Not Applicable

d) Straightness: The finished poles shall not be out of straightness by more than 1/600 of the height.

5. Tests

5.1. The following test (s) shall be performed for the pole furnished. All testing shall be fully documented and certified test reports shall be provided to NEA.

a Tensile test and chemical analysis for sulphur and phosphorous
b. Deflection test
c. Permanent set test
d. Drop test

5.2 Number of poles selected for conducting tensile test and chemical analysis for sulphur and phosphorous shall be as given below:

Lot Size	No. of poles
Up to 500	1
501 to 1000	2
1001 to 2000	3
2001 to 3000	4
3001 and above	5

5.3 Number of poles selected or conducting deflection test, permanent set test and drop test shall be as given below:

Lot Size	No. of poles
Up to 500	5
501 to 1000	8
1001 to 2000	13
2001 to 3000	18
3001 and above 20	

The deflection test, permanent set test and drop test shall be conducted in succession on each of the poles selected.

5.4 Deflection Test (Not applicable for joint pole)

Each pole shall be rigidly supported for a distance from the butt end equal to the depth which it is to be planted in the ground. It shall then be loaded as cantilever and the appropriate deflection load of Table applied at right angles of the axis of pole 30 cm from the top of the poles up to 9 m (overall) and 60 cm from the top for poles over 9 m (overall). For convenience in testing, the pole may be fixed horizontally and the load applied vertically. The temporary deflection due to the applied load at the point of application of load shall not exceed 157.5 mm.

5.5 Permanent Set Test (Not applicable for joint pole)

This test shall be carried out immediately after the deflection test. After application of proper load specified in Table 1 the permanent set measured from the zero position after the release of the appropriate applied load at the point of application of the load shall not exceed 13 mm.

5.6 Drop Test (Not applicable for joint pole)

The test shall be made in the case of swagged poles. The pole shall be dropped vertically with the butt end (bottom end) downwards, three times in succession from a height of 2 m on to a hardwood block 150 mm thick laid on concrete foundation. The pole shall not show any signs of telescoping or loosening of joints.

5.7 Should of any of the poles selected fail to pass any of the tests specified above two further poles shall be selected for testing from the same lot in respect of each failure. Should both these additional poles fail, the test material represented by the test samples shall be deemed as not complying with these specifications.

6. Quality Assurance Program

Along with the Bid the Bidder shall furnish quality assurance program of the manufacturer which includes the Quality System and the Quality Plans, which shall include, among others, information to meet the following requirement, failing which the Bid shall be liable for rejection.

1. The structure of the organization;
2. The duties and responsibilities assigned to staff ensuring quality of works;
3. The system for purchasing, taking delivery and verification of materials;
4. The system for ensuring quality of workmanship;
5. The quality assurance arrangement shall conform to relevant requirements of ISO9001:2000;
6. Statement giving list of important raw materials, names of manufacturer for the raw materials, list of standards according to which the raw materials are tested, list of test normally carried out on raw materials;
7. List of manufacturing facilities available with supporting documents;
8. List of areas in manufacturing process, where stage inspections are normally carried out for quality control and details of such tests and inspections;
9. List of testing equipment available with the manufacturer for final testing of equipment specified and the test plant limitation, if any, vis-à-vis the type, special, acceptance and routine tests specified in the relevant standards.

7. Bid Documentations

7.1 The Bidder shall provide with the Bid two (2) clear copies of the governing standards for selections of steel tubings, and any standard followed in the fabrication and testing of the poles offered.

7.2 The Bidder shall provide a description and certified dimensional drawings of each type of pole otherwise the bid offer shall be rejected.

7.3 Two (2) clear certified copies of all type tests performed on similar type of poles and similar working loads otherwise the bid offer shall be rejected. The type test must have been carried out in recognized national or international testing laboratory or independent testing laboratory other than manufacturer.

7.4 A clause-by-clause commentary of specification, specifying compliance and deviations, if any.

7.5 All` data, drawings, catalogues and other technical documents shall be bound separately from the Bid documents.

Table 1

Poles Specifications

IS Designation	410SP- 52	410 SP-43	410 SP-31	410 SP-13
Overall Length	11 m	10 m	9 m	8 m
Planting depth. m	1.8	1.8	1.5	1.5
Sections:				
Length, m				
Top (h1)	2.7	2.4	2	1.75
Middle (h2)	2.7	2.4	2	1.75
Bottom (h3)	5.6	5.2	5	4.50
Outside Diameter, mm				
Top (h1)	114.3	114.3	114.3	88.9
Middle (h2)	139.7	139.7	139.7	114.3
Bottom (h3)	165.1	165.1	165.1	139.7
Thickness, mm				
Top (h1)	3.65	3.65	3.65	3.25
Middle (h2)	4.5	4.5	4.5	3.65
Bottom (h3)	4.5	4.5	4.5	4.5
Approximate weight, Kg	175	160	147	101
(Excluding the Weight of Galvanization, Base Plate and Cap)				
Crippling load, kgf	307	348	367	301
Application of load from top of pole, m	0.6	0.6	0.3	0.3

CONSTRUCTION STANDARD

CONSTRUCTION WORKS

1. General

1.1 These specifications together with the Construction Standards shall govern the performance of the Works and shall be the basis for inspection and acceptance of the Works by the NEA.

1.2 These specifications and the Construction Standards shall be considered as mutually inclusive, and the conditions stated in each shall supplement the other as appropriate.

1.3 All these specifications shall be followed at all times by the Contractor unless specifically accepted in writing by the NEA, or unless some aspects of the work covered by these specifications are not required by the scope of work.

2. Route of Circuits

2.1 The line routes shown on line route drawings are provisional and subject to finalization by the Contractor. To the greatest extent practicable, all overhead circuits should be located along streets or traveled ways ordained by the Village Development Committee or required authority as public property, except as required for service drops and circuits to individual consumers.

2.2 To the greatest extent practicable, all facilities should be located on public property, and in no case shall private property be occupied unless specifically authorized by the NEA. *Community shall be responsible for providing right of way.*

3. Surveys and Staking

3.1 All structures should be located at the outer limits of public property along streets or travelled ways. Structures should also be located along streets at property lines of adjacent private property. Structures and stays running parallel or perpendicular to the line route shall not block portions of streets, travelled ways, drives, passages, or gates.

3.2 All structures shall be so located as to reduce, to the greatest extent practicable, obstacles to pedestrian and vehicular traffic.

3.3 Where underground facilities are indicated by surface conditions, or where such facilities can be located, structures and stays shall be so located as to avoid conflict with such facilities during construction.

3.4 All structure and stay lead locations shall be staked. At points of intersection (PI) of tangent line sections, steel rebar stakes shall be used to locate the PI. A minimum of two (2) side sightings will be made at each PI to permit re-location of PI in the event of stake removal. All structure locations in tangent line sections shall be staked.

3.5 All distances between structures, and other necessary measurements of length, shall be measured to accuracy of 0.1 meter and all angles shall be determined by transit to an accuracy of 0.1 decimal degree. All elevations shall be measured to an accuracy of 0.1 meter by means acceptable to the NEA.

3.6 All measuring and staking activity shall be accomplished by personnel with experience in survey procedures; and standard survey equipment acceptable to the NEA, shall be used to perform the survey work. Field survey notes covering all survey work shall be produced and maintained and shall be returned to the NEA at the time of submission of final PCS report. The format of proposed survey notes shall be submitted to the NEA for approval.

3.7 Survey work shall include centerline and structure location and staking; determination of overhead and side clearings of other structures, wires, and obstacles; area surveys and plotting; and centerline profiles of terrain; as directed by the NEA.

4. Technical Documentation

4.1 All technical documentation as specified herein shall be prepared by the Contractor. The Contractor shall employ skilled drafting personnel to produce all documentation specified. All technical documentation prepared by the Contractor shall be subject to the approval of the NEA prior to acceptance by the NEA of such documentation. All technical documentation shall be prepared in the English language.

4.2 Documentation shall be prepared using the following mediums:

(a) A4 Size of paper shall be used to produce the base Structure Data Sheet (SDS) and A1 size of drawing papers for As-Built Drawings and other drawings specified by the NEA. The scale for drawing shall be 1:5000.

A1	594 mm × 841 mm	(23.39" × 33.11")
A4	210 mm × 297 mm	(8.27" × 11.69")

(b) Computerized geographical information system shall be used to produce small area plotting, profiles of line-sections and centerline plotting necessary for the development of SDS and As-Built Drawings.

(c) A set of digitized data on CD shall be submitted separately.

4.3 SDS shall be prepared, *Preamble to Price Schedules* by the Contractor showing his proposed construction details for erection of facilities in accordance with the Construction Standards. The SDS shall be prepared after the centerline survey and staking is completed, for any line section designated by NEA, and shall be submitted to NEA for approval prior to any construction of the facilities shown in SDS. Submission of SDS for approval shall be in A4 size paper.

NEA may require any revisions to be made, at their sole discretion, prior to approval of the SDS for construction. An approved and field checked SDS is required for all Construction Units invoiced by the Contractor. The Contractor and NEA representative shall perform Field checking of the SDS jointly. The SDS and As Built Plan are intended as permanent records for NEA. Any construction performed prior to the Contractor's receipt of approved SDS from NEA shall be completely at the Contractor's risk, and NEA shall have the right to require any correction due to the un-approved construction activities.

4.4 As-Built Drawings shall be prepared by the Contractor in the general format provided by the NEA. Drawing size shall be approximately 841 x 594 mm overall and the scale shall be 1:5000. The NEA shall provide any available environmental background data for inclusion on the various drawings and the Contractor shall record (in ink) all facilities As Built.

4.5 The Contractor shall prepare other technical drawings, in the same medium and format as the As-Built Drawings, for example As-Built Drawings index sheets, pole maps, and one line diagrams as specified and required by the NEA.

4.6 The Contractor shall prepare and furnish Transformer Record documents, in the format specified by the NEA, for each transformer installed.

5. Material Storage

5.1 The Contractor shall be responsible for storage of all materials and equipment delivered by him for the work; and security of materials. The Contractor shall manage all labor, equipment, and vehicles to load and transport said materials and equipment to the worksites.

5.2 Worksite

(a) Extended storage of materials along the routes of lines will not be permitted.

(b) Conductor reels may be spotted at the worksites for a short period prior to installation provided that crating and reel lagging are intact to protect the items. Poles may be spotted at structure locations for short periods prior to setting.

(c) All poles, and conductor placed at the worksites shall be located so that the items are not subject to damage and do not impede pedestrian or vehicular traffic.

(d) Any damage caused by imprudent placement of equipment and materials by the Contractor at the worksites shall be corrected by the Contractor, in a manner acceptable to the NEA, at the Contractor's cost.

5.3 Contractor's Storage Facility

The Contractor shall be financially responsible for the secure and proper storage of materials, prior to installation of the materials and equipment, to prevent loss or damage to any materials. However Contractor may use NEA sub-stations premises subject to approval of concern NEA/Substation Authorities.

6. Poles and Cross Arms

6.1 Pole Numbering

Poles and structures shall be numbered in accordance with a numbering system provided by NEA. Each pole shall be marked permanently through template with the assigned number.

6.2 Pole Framing

Pole and structures shall generally be framed in accordance with Construction Standards and the construction SDS. Where special framing requirements are necessary, the Site Engineer or Engineer shall provide framing instructions for the specific structure.

Each cross-arm shall be attached to the pole by a pole clamp or by machined bolts of sufficient length to pass completely through the holes provided on the pole and cross-arms and receive their full complement of nuts.

Bolts of proper length shall be used. Excess nuts shall not be used to make use of a bolt, which would otherwise be too long. The end of a machined bolt projecting more than 3 centimeters beyond the nut shall be cut off to a length of 2 centimeters beyond the nut. Each bolt, when installed, shall have its full complement of nuts.

Washers shall be used where specified in these standards. For wooden pole, bolted connection through wood members should be drawn tight to allow for shrinkage of wood. Bolts should be pulled up so that the wood is compressed but not so tight to break the wood fibers. Fiber breaks on the surface of the pole increases probability of decay.

During the erection work at the field there may be necessity to modify galvanized steel hardware and may have to be drilled, reamed, filed or cut. Under such a condition the area of the steel exposed, after these modifications, shall be coated with a zinc-rich paint to protect the steel from corrosion.

6.3 Excavation

All excavations made for the installation, or demolition, of facilities shall be accomplished in a timely manner according to the scheduled installation. Required excavations shall be opened, material installed, and backfill placed, as specified, in a continuing operation to the greatest extent practicable.

Any excavation left open during discontinuous construction, which is accessible to the public or along public thoroughfare, shall be covered or barricaded, and marked by suitable visual means, to prevent a public hazard.

Excavations shall be properly located and sized for the intended use. Pole and stay plate/ anchor excavations shall be correctly sized to retain undisturbed soil to the greatest extent consistent with the means of excavation. Pole holes shall be made by power-driven auger or by manual methods; power-driven shovel equipment shall not be used. Pole holes shall be excavated to the specified depth with no tolerance shallow and tolerance of ten (10) centimeters deep. The bottom of pole holes shall be undisturbed soil, gravel or rock. Stay plate holes shall be excavated by manual methods to specified depth with no disturbed soil in the direction of the anchor rod.

All excavations shall be backfilled with excavated material, or as specified for the installation. Backfill shall be free of foreign materials and shall be well tamped with excess backfill graded over the excavated area to prevent depressions resulting from eventual natural compaction. The Contractor if so directed by NEA shall remove large amounts of excess backfill from the site. If so directed by NEA, the Contractor shall provide suitable backfill materials for excavations where existing removed materials is insufficient, or inappropriate, to provide suitable grading of the excavated area.

6.4 Pole Setting

Poles shall be set in accordance with the appropriate Sections of the Construction Standards.

Each pole shall be assigned a unique construction number at the time of structure staking for preliminary identification and preparation of SDS.

Pole holes shall be dug large enough in diameter to admit a tamping bar all around the periphery of the pole and shall have a uniform dimension as per the type of pole used at the top and bottom. Poles shall be planted in the ground to the depth specified in construction. Drawings before planting a pole, the bottom of the hole made for planting the pole, shall be cleaned of free soil and firmly tamped, to prevent the hole from settling.

The stability of a pole, particularly a pole without stay, is greatly influenced by the size of the pole hole, the nature of the soil and the care exercised in back filling and tamping. Two active hand tampers and one slow shovel shall result in good compaction.

Poles shall be set to stand perpendicular except at terminals, angles and other points of excessive strain where they shall be given a rake not to exceed 10 centimeters against the direction of strain. Poles located at the sides of banks or other locations, where washouts may occur, shall be protected by suitable cribbing, or shall be referred to the Engineer for recommended action.

After the pole is in position and the hole is back filled and tamped, soil shall be piled and packed firmly around the pole. Pole setting shall be inspected prior to acceptance and any back fills that have sunk shall be refilled.

Where it is necessary to set poles at locations where the soil has very low bearing value, or in swampy conditions, a pole may be fitted with a bog shoe in accordance with construction drawings the engineer may specify that type of construction.

Poles located in shallow riverbeds shall be protected by gabions as designated by the Site Engineer or Engineer. Gabions should be approximately 2 meters x 1 meter x 1 meter. Four such gabions are required for each pole.

Set pole and pour 860 mm diameter foundation as per construction standard construction drawing. Level areas around pole and set gabions in pattern shown in construction drawing. It is important to lace adjacent gabions together along the perimeter of all contact surfaces. Fill gabions with hard, durable, clean stone, 100 mm to 200 mm in size in three layers. Install two connecting wires at each layer. Lace gabion lids securely making certain all edges are closed. Fill void between pole and gabion with hard, durable, clean rock 200 mm minimum size.

7. Stays

7.1 Stay leads specified in construction documents are defined as the horizontal distance from the centerline of the pole at ground line to the point where the anchor rod should enter the ground assuming the ground to be level. For the correction in stay leads for uneven ground see construction drawing.

The Engineer, upon request, may designate the actual location of stay anchor rods on slope of hills. The stay stake indicates the point where the anchor rod enters the ground. The anchor hole shall be dug accordingly.

The attachment of one stay shall not overlap that of another stay when 2 or more stays are carried to a pole or anchor. Each shall be entirely independent of the other. This does not prevent the use of multiple eye rods for nuts designed for such use.

All stays to be installed on a pole line shall be placed and drawn reasonably taut before the conductors are tensioned. After the conductors are tensioned and sagged to their final position, the stays shall be carefully inspected to see that each is carrying its share of the load on the pole as intended. If multiple stays are not carrying equal strain, the slack stay shall be pulled up until it is sharing load as intended.

Stay anchors must be installed full depth and set to pull against undisturbed soil to develop full tension. An anchor not properly installed will move and allow movement of the top of the pole, thus slacking the conductors. Stay anchors installed in soft or unstable earth shall be placed at specified depth and back filled with 5 cm. maximum size crushed stone placed to a depth of 1 meter from the bottom of the pole.

7.2 Installation of Stays

Where stays are installed on a line angle structure, line of stay shall bisect the outside line angle.

The span of stay extending between poles shall not be greater than 60 meter.

Anchor and anchor rods shall be set so that the axis of the rod and line of stay shall be straight. The portion of the anchor rod above the ground shall not be bent at an angle to connect a stay wire. If this occurs, anchor and anchor rod shall be reset. The anchor rod shall not be exposed for more than 15 centimeters above the ground after the anchor is set.

If gravel back fill is required to set anchor in soft or unstable soil, as per construction drawing the Contractor will have to carry out the gravel back fill as directed by Engineer.

If a stay is installed on a pole where low voltage conductor is dead ended or double dead ended and extends past stay, a piece of plastic hose slit along the length shall be placed over the stay wire extending from the upper stay attachment to 200 mm below lowest low voltage conductor. After installation, the hose shall be wrapped with plastic tape and the hose shall be secured to the upper stay bolt with tie wire.

7.3 Stay Insulators

Stay insulators shall be installed on all stays in accordance with the construction drawings.

8. Conductor

Aluminum Conductor Steel Reinforced (ACSR) conductor shall be used for 33,11,0.4/0.23 kV overhead lines.

8.1 Sagging

Conductors shall be sagged in accordance with the sag chart specified by these specifications.

The importance of careful sagging of conductors cannot be over emphasized. Conductors have definite characteristic that control their behavior resulting from changes of temperature, wind speed and additional load due to ice or wet snow.

Conductors must not be sagged too tightly (less than specified sag) as unspecified extra tensions may result in failure of conductor structure.

Conductors sagged too loosely (more than specified sag) may contact adjacent conductors hardware or any structure. Excess sag can reduce clearance beneath the line with the ground to the point of danger.

8.2 Sag Charts

Unless otherwise noted, all sag charts are calculated on the basis of 35 kg/m^2 wind pressure

Sag is always measured vertically, without wind, when conductors are being installed or re-sagged.

Unless otherwise specified by the Site Engineer or Engineer for a specific condition, initial or stringing sag shall be applied to the installation of all new unstressed conductors. The initial sag is always less than the final sag. The most practical method of obtaining the correct sag is by sighting between two adjacent structures. Choose the structure, which is reasonably near the same elevation

Sags for the various temperatures shall be furnished by the Engineer in a table form for spans not covered by the sag chart.

In order to ascertain the sag for a given stringing temperature, select the point corresponding to the proper temperature on the scale on the left-hand side of the sag chart. Lay a straight edge so that it passes through this point and the point of the center scale representing the length of span to be sagged. The straight edge will then indicate the proper stringing sag on the right-hand scale. Interpolate if the temperature of span is not exactly the same as designated on the chart. The low voltage neutral conductor shall be sagged with the same sag as the low voltage phase conductor. If the low voltage conductor, as a group, has less design sag than the high voltage phase conductor installed above it, the low voltage conductor, as a group, shall be installed to the same sag as the high voltage conductors installed above. The sag of pre stressed conductors such as installed with a tensioning machine shall be specified by the Engineer for the job.

8.3 Stringing

All cable grip used for the installation of conductors shall be of the type designed to prevent injury to the conductor.

Attach targets to each structure at a distance below each point of the support of conductor equal to the required sag. Sight from one target to the other. The line of sight between targets may be horizontal or inclined. Draw the conductor up to the proper sag, which will be reached when its lowest point will be in line with the target.

Where terrain and / or length of span in such that the targets would fall below the ground line, the difference in elevation between the lower conductor attachment and the lowest point of sag, sag below lowest support will be furnished by the engineer in the tabular form.

The dynamometers and similar apparatus shall be used for tensioning of conductor to obtain appropriate sagging of conductors. Dynamometer shall be used only when the sight method is not feasible. Dynamometer shall be checked for accuracy before using.

For stringing of ACSR conductors of all sizes, stringing rollers or roller shall be used to support the conductor as it is pulled out and sagged. Stringing rollers shall be used regardless of size of aluminum conductors, bare or covered.

Stringing rollers shall be suspended at each insulator support position so that the conductor shall roll smoothly over the roller-protecting conductor from any physical damage.

Stringing sheaves shall have a diameter at least 20 times the conductor diameter and so finished as to prevent damage of any kind to the conductor as it is pulled through the sheaves.

Conductor drum shall be located at a sufficient distance from the first structure to avoid excessive bending of the conductor over the sheaves and excessive downward loading on the cross-arms.

Attention shall be paid to the fact that all sag charts contained herein for ACSR conductors are calculated on the basis of non pre-stressed conductor. For this reason, at no time during the stringing or sagging operation, shall conductors of this type be pulled to sag, which are less than those shown by the charts.

Special care shall be taken at all times to prevent the conductor from becoming kinked, twisted or abraded in any manner. Where it is necessary to drag conductors on the ground, the conductors shall be protected by covering all stones or other objects, which might damage the conductor with boughs or trees or suitable pieces of lumber. These requirements are especially important when ACSR conductor is being handled on river crossing spans. Floats with rollers shall be used to prevent the conductor from dragging along the river bottom.

In stringing conductors across highways, the conductors shall be fully protected from passing vehicles by use of temporary guard structures.

8.4. Damaged Conductor

Damaged conductors shall be repaired by using a repair sleeve provided that no more than 2 strands of the outer aluminum layer are damaged and further provided that none of the sleeve core strands are damaged. For a conductor damaged in excess of the above conditions, the damaged section of the conductor shall be cut out and a tension splice installed.

When cutting out damaged section of conductor, no more than 1 tension splice shall be permitted in a span and no splice is made within 8 meters of an insulator attachment.

8.5 Sag Error

Sag error shall not exceed ± 40 mm from the sag defined by the sag chart.

8.6. Conductor Attachment

Conductors shall be secured to pin insulators with pre-formed conductor ties or with tie wire. Insulator ties, except at jumper supports in structures, shall be made with pre-formed ties when available.

Conductors shall be connected to dead end assemblies with tension set.

8.7 Line Splices for Tensioning and Looping

Cleaned and polished contact surfaces are necessary to make conductor splices so that it shall remain free from trouble. Great care shall be taken to completely clean the strands of aluminum conductor. The splicing sleeve must be centered over the conductor ends before compressing to make a splice of required strength.

Appropriate sleeve shall be used for splicing ACSR conductors prior to installation. The outer strands of aluminum shall be carefully cleaned with a wire brush to remove all foreign matter till the aluminum shines brightly. The cleaning applies to both new and old conductors. The manufacturer pre-filled with inhibitor compound supplies splicing sleeves for aluminum conductor.

Splices in line conductors shall be so located that the end of the splicing sleeve is at least 30 cm from the end of a suspension or dead end clamp. Non-tension loops, such as between dead ends, shall be spliced with a connector when the conductors are of same metal and size.

8.8 Connectors

Cleaned and polished contact surfaces are necessary to make electrical connections that will be free from trouble.

Tap connectors are supplied by manufacturers pre-filled with inhibitor compound. Excess inhibitor compound shall not to be removed but it shall be wiped over the connector as a moisture seal. Connectors shall not be covered or taped.

Compression connectors shall be located in such a manner that there shall be at least 30 cm of conductor between the end of the connector and the end of a dead end

Connectors shall be installed on non-tensioned portion of the conductor such as loops in preference to the conductor in the span.

Connectors installed on conductor shall be located in a span adjacent to the crossing rather than the crossing span when practicable.

Aluminum compression connectors, pre-filled with inhibitor compound, shall be compressed on the cleaned area of aluminum conductor. Where necessary, inhibitor compound shall be applied to the cleaned conductor and connector before assembly.

Aluminum compression connectors shall be used for connecting aluminium-to-aluminium conductors.

8.9 Conductor Accessories

Pre-Formed Ties and Grips

Taps for jumpers and services shall not be made over the legs of ties or dead end grips.

Pin Insulator Ties

Pin insulator ties are of 2 types:

a. With single top grooves: Single top ties may be used to turn line angles to 7 degrees where single insulators are permitted. Please refer construction drawing for specific applications.

b. With side grooves with specific size of ties for specific conductor in each tie style: Specific usage is dictated by insulator pin loading and use of single insulators as specified in construction drawing.

Shackle Insulator Ties

Shackle insulator ties are furnished in one type with specific size of ties for specific conductor. Shackle ties may be used to turn line angles at 20 degree. At the line angles, the conductor shall be located on the side of the vertically installed shackle insulator that causes the conductor to be forced against the shackle insulator. Angle loading shall not be imposed on the ties itself.

Preformed Stay Wire Binder

Preformed stay wire binder for stay wire are furnished as per construction drawing.

Preformed stay wire binder are right hand lay. Preformed stay wire binder may be removed and replaced up to 3 times, when initially installed, to permit adjustment of stay tension.

When applying ties or grips the manufacturer's identification tag and colour coding shall be checked to insure that the tie or grip is the right unit specified for application on the specific conductor or wire strand.

Perform for stay wire are furnished with 2 crossover markings. When applying perform on hardware, the grip shall be installed using the crossover point closest to the loop of the grip.

Compression Fittings

Full-tension conductor splices and repair sleeves are furnished for all conductors to be installed.

a. Full Tension Conductor Splice

Full-tension spliced for ACSR conductor is provided in a 2/1-piece unit. Full tension conductor splices will develop full conductivity of the conductor and a minimum of 95% of the rated conductor breaking strength. Please see construction drawing for splicing instructions.

b. **Repair Sleeves**

Conductor repair sleeves are furnished for all conductors to be used to restore the rated current carrying capacity of conductors with broken strands. Repair splices have no tension rating.

8.10 PG Clamps

PG clamps are furnished in a full range of sizes for application in the non-tension connection in 33, 11 kV circuits. The PG clamps are designed for general use in making tap and jumper connections of various types.

In all applications of PG clamp fittings, the conductor metal shall be wire-brushed to a bright condition to remove surface oxidation on the conductor.

8.11 Application

When applying ties or grips the manufacturer's identification tag and colour coding shall be checked to insure that the tie or grip is the right unit specified for application on the specific conductor or wire strand.

Preformed for stay wire are furnished with 2 crossover markings. When applying preformed on hardware, the grip shall be installed using the crossover point closest to the loop of the grip.

In all applications of PG clamp fittings, the conductor metal shall be wire-brushed to a bright condition to remove surface oxidation on the conductor.

8.12 Line Construction

Arrangement of Conductor

The standard position of 33, 11 kV phase conductors on the cross-arm in the normal triangular configuration looking from the normal source of power supply shall be seen as:

Red (R) on top of the pole, Yellow (Y) on right hand end of the cross-arm and Blue (B) on left hand end of the cross arm.

Attachments to Poles

Boltholes are provided on poles for cross-arms, cross-arm braces and stay bolts.

Conductor Ties

Pre-formed ties and grips shall be used for attaching conductors to structures when available.

If pre-formed materials are not available, the wire shall be soft conductor so that when made up, the tie wire will bind the conductor tightly. No tie wire shall be used for a second time.

Tie wire shall be of the same metal as that of the bare conductor to which the tie is applied.

Conductor Support

The conductor supports on straight lines shall be carried on the top wire groove of the pin insulator. Conductors shall be attached to the side conductor groove of pin insulator on the outside of angles so that transverse conductor tension will tend to hold the conductor in the insulator groove.

Conductor ties shall not hold a conductor on the insulator when uplift exists. If uplift is found, it is required to consult with the Site Engineer or the Engineer to determine remedial action to be taken.

8.13 Pole Wiring

All taps or connections passing from one level to another on the pole shall, as far as possible, be vertical. Connections shall have sufficient length so that the line conductors are not moved from normal positions and normal movement is not restricted. Connections shall have at least 30 centimetres clearance from other conductors. Any connection carried from one side of the pole to the other side shall be supported on pin insulators.

9. Transformer Structures

Distribution panel-board material and equipment ratings shall be determined by the kVA rating of the transformer and number of 400/230 volt out going distribution circuits.

Where out going distribution circuits are installed, pole moment loading must be balanced by another out going distribution circuits in the opposite direction or by installation of stays.

Two separate rods shall be used to earth the transformer structure

a.) One for surge arresters and equipment

b) Another for the neutral of transformer low voltage winding, body of transformer and the body of MCCB box.

Each earth rod shall be driven at a minimum distance of 2 meters from the adjacent pole resulting in a minimum distance of 6 meters between the two ground rods.

Ground conductor lead shall be stranded steel wire.

1/2" banding material shall be used to strap grounding conductors to pole(s) at one (1) meter intervals.

Compression connectors and PG clamp shall be used to make all electrical connections. When connecting copper transformer circuit conductor to the secondary line conductors, the copper conductor shall be placed below the aluminium conductor at the connection so that rainwater will flow from the aluminum conductor onto the copper conductor.

Conductor shall be terminated on main breaker and neutral bus with cable socket of proper size.

Individual conductors of the circuits located in panel boards shall be bundled with cotton or nylon cord and trained and tied to conductor standoff clips.

10. Installation Criteria

10.1 The line alignment should be as straight as possible to minimize requirements for stays.

The basic span shall be maintained within the following limits:-

33 kV line: 50m to 55 m

11 kV line: 50m to 55 m

Low voltage and composite line:

S. No.	No of wire	Span in meter
1.	4 wire	35-40
2.	3 wire	40-45
3.	2 wire	45-50

10.2 The entire construction works shall be performed as per the construction units specified. Whenever the construction unit does not cover any specific activity, the Contractor and the BRO shall mutually settle the cost as per the man-hour involvement for the same and according to the labor rate quoted by the Contractor in his Bid.

10.3 Detailed schedules of material to be used are provided in each structure drawing of the construction standards. It shall be the responsibility of the Contractor to judge the appropriateness of the listed material according to the site conditions. If there is any need for addition/reduction or deviation from the listed material size/quantity, the Contractor shall ask the BRO for the approval of the same.

10.4 All types of line clearances shall be maintained as per the construction standards provided to the Contractor. Deviations from the standards may be allowed only for unique or special conditions.

10.5 Safety rules of the NEA shall be strictly observed at all times by the BRO and the Contractor and their personnel. Special care shall be taken to maintain the optimum conductor sag to provide adequate safety to the construction and the property or people.

10.6 All fastenings (e.g. preforms, nut bolts, stays and the like) shall be so installed that the constructed line components shall not fail to remain within the safety margin while maximum working load is applied.

10.7 If the Contractor requires clarification of any construction standard or unit or he feels any doubt in his interpretation of construction activities he should clarify the points with the BRO in writing and the decision thus made shall be valid for further work.

10.8 HV Insulators: The Contractor shall use HV pin insulators in the alignment of the line where the break angle does not exceed the limits provided hereafter,

S. No.	Conductor Size in mm^2	Minimum Break Angle in Degrees
1.	100 (Dog)	7
2.	50 (Rabbit)	15.5
3.	30 (Weasel)	24.5

In the case where the break angle exceeds the above values the Contractor shall make dead end at the angle structure and use disc insulator fittings.

11. Installation of Stays

11.1 The Contractor, in general, shall install at least one stay for the supports in the following cases

(a) Dead end structure

(b) Tee-off (Tap) structure

11.2 Stay may not be installed in the following conditions

HV Line (33, 11 kV) with 11 m Pole

a) - Conductor 3x100 mm^2

- Span 75 m (max)

- Break angle: 4 deg.

b) - Conductor 3x50 mm^2

- Span 75 m (max)

- Break angle: 5.5 deg.

c) - Conductor 3x30 mm^2

- Span 75 m (max)

- Break angle: 6.5 deg.

Composite (HV +LV) line with 11 m pole

a) - Conductor 3x100 mm^2 HV; 3x50 mm^2+30 mm^2 LV

- Span 40 m (max)

- Break angle: 2 deg.

b) - Conductor 3x50 mm^2 HV; 3x30 mm^2+1x30 mm^2 LV

- Span 50 m (max)

- Break angle: 2.5 deg.

For conditions different from the above, the Contractor shall provide calculations showing the number of stays necessary and get approval from BRO prior to installation.

12. Transformer Mounting

Each transformer (except single phase pole mounted) shall be so mounted on the platform that the centre of the transformer is in the middle of the platform. Deviations are not permitted from this rule.

13. Grounding Procedure

13.1 Purpose

Grounding conductors and electrodes (ground rods) are installed on poles and structures to provide a low impedance path to ground for fault currents and over voltages and current waves initiated by lightning strokes. The objective is to minimize possible difference in potential between normally non-current carrying parts and from those parts

to ground. It is also necessary to provide a current path to ground to enable protective devices to quickly de energize the circuit under over voltages and over current conditions.

13.2 **Parts to be grounded**

The following parts shall be grounded

a) Surge arrester ground studs

b) Normally non-current carrying parts of the switches, frames, panel boards, cabinets, re closer tanks etc.

c) Low voltage neutral points of the transformer.

d) Neutral for the low voltage (0.4/0.23 kV) line shall be grounded at every 15 poles.

13.3 **Grounding Conductors**

Conductor sizes for grounding of specific parts shall be made as follows.

Surge Arrestor	2AWG copper welded
Switch frames and re closers	2 AWG copper welded
Transformer neutral points	25 sq mm copper wires

All the grounding conductors shall be installed with the high-density polythene pipe at least above reach of the human beings

13.4 **Ground Rod Installation**

At switches, re closers grounding points the ground rod shall be installed in the ground at a minimum lateral distance of two meter from the associated poles. The top of the ground rod shall be driven to a minimum depth of 40 centimetres below grade before connecting the ground conductor to the ground rod.

At the transformer structure body of the transformer and the body of surge arrestor, MCCB box, the grounds shall be separated laterally from transformer secondary neutral point grounds by a minimum of 6 meters. Ground rods shall be driven to a minimum depth of 40 centimeters below grade before connecting the grounding Conductor to the ground rod.

The grounding conductor shall be encased in a rigid plastic pipe for a distance of 3 meters above the top of the concrete pole foundation or collar. The plastic pipe shall be of sufficient internal diameter to contain the grounding conductor.

14. 400/230 Volt Low Voltage Circuits

General Instructions

14.1 **General**

Bare wire 400/230 Volt circuits shall be supported on shackle insulator with D-iron. Generally, shackle insulator with D-iron shall be placed on the same side of the pole throughout the length of the line. Care shall be taken to see that shackle insulator with D-

iron shall be mounted on that side of the pole from where most of the house service connection shall be extended.

Spacing between two conductors for low voltage circuit shall be 305 mm.

The three low voltage phase conductor shall be located in descending order from the top of the pole with Red (R) on the top, Yellow (Y) below Red and Blue (B) below Yellow. The low voltage neutral conductor shall occupy the bottom position.

14.2. **Neutral Conductor**

Neutral conductor may be the same size as the phase conductor or be sized smaller than the phase conductors. The neutral conductor size shall be specified by the work plan.

All neutral conductors shall be bare ACSR.

14.3 **Phase Conductor**

Phase conductors shall be bare ACSR conductor as specified by the work plan.

15. Safety

15.1 The Contractor shall take all measures required to safeguard the public, public and private property from any hazard to life, limb, or property, which may arise during the performance of the construction of the works. Such measures shall include, but not be limited to barricades, signs, newspaper announcements, traffic control by police, or other advisory and control methods deemed appropriate.

15.2 The Contractor shall provide his work force with all tools and equipment in sufficient numbers and quality to perform all aspects of the works in a safe manner. The Contractor shall provide protective headgear for all members of his workforce, and shall provide protective clothing as required for specific tasks. The Contractor shall instruct his work Force in proper and safe construction techniques and shall continuously monitor compliance with safety instructions throughout the period of the Contract.

15.3 The Contractor shall provide, and require use of, protective grounding equipment when :

a) Work is being performed on lines adjacent, either in extension of, or parallel to, energized circuits.

b) Work is being performed on isolated circuits after conductors have been installed

15.4 The Contractor shall maintain all tools and equipment in good working order. All mechanized equipment shall have adequate safety mechanisms and guards in place and be fully operational. Operators of such equipment shall be skilled and fully trained in the operation of such equipment.

15.5 The Contractor shall provide and maintain emergency medical supplies to cover with accidents and snakebites for his work force on a readily available basis. The Contractor shall also instruct all supervisory personnel in the action to be taken in the event of serious injury, and the sources and locations of professional medical assistance, which shall be employed in such cases.

15.6 The Contractor shall apply all accidental insurance policies to his work force for an accident occurring during the working period of the construction.

16. Tests

16.1 The Contractor shall furnish the electrical test equipment and personnel to perform electrical tests of equipment and circuits, as specified by, and under the supervision of the NEA.

16.2 The Contractor shall meggar all circuits installed with a motor-driven megger or equivalent instrument to demonstrate the acceptable insulation characteristics of the line prior to energization and Provisional Acceptance. 400/230 V overhead circuits shall be tested at 500 volts AC.

16.3 The Contractor shall conduct DC hi-potential tests on all underground circuits, after makeup but prior to backfilling. The test shall be made with DC hi-potential test set capable of non-destructively testing the cable at approximately 300% of cable voltage rating.

16.4 The Contractor shall megger all transformers with a motor-driven megger prior to connection to the LV network.

16.5 All tests specified shall be conducted during suitable atmospheric conditions under the supervision and witness of the NEA. All test results shall be documented and signed by both parties.

17. Demolition

17.1 The Contractor shall perform the removal of all existing facilities in accordance with the specific directions of the Authorized Personnel. All materials removed shall remain the property of NEA and the Contractor shall deliver all salvaged materials to the NEA warehouse, or as specifically directed by the Branch Chief in writing.

18. Cleanup

18.1 The Contractor shall ensure that all worksites shall be free of all manner of debris resulting from the construction activity.

18.2 All crating, conductor reels, packaging materials, conductor scraps, and other miscellaneous items are removed from the workplace. All holes resulting from removal of

facilities shall be filled. If trees or brush have been cut or trimmed, all cuttings shall be removed. The worksites shall be left in clean natural conditions.

18.3 Site cleanup shall be an integral part of the Provisional Acceptance process, and no line section shall be provisionally accepted unless all cleanup work has been accomplished.

19. Tree Cutting and Trimming

19.1 Any tree cutting or tree trimming shall be accomplished by the Contractor in coordination with CBO.

19.2 All cutting shall be removed by the Contractor with disposition of cutting as specified by NEA.

20. Interruptions to Existing Service

20.1 The Contractor shall arrange for interruptions of service to existing lines with NEA. Every effort shall be made to limit such interruptions to the minimum.

20.2 If it is possible to maintain service to a section of line by constructing temporary facilities approved by NEA, the Contractor shall detail man hours and classification of personnel required to construct such facilities and submit to NEA for approval prior to any work being performed. Payment for approved work shall be based on the rates covered in *Preamble to Price Schedules*.

TECHNICAL DATA SHEET

(To be completed by the Bidder)
ACSR Conductor

	Description	***Queries***
1.	Manufacturer	
2.	Copies of fabrication standards attached?	Yes/No
3.	If standards are other than BS: 215 / IEC: 209 (Part II) Then conductor specifications are same as	
	BS: 215 / IEC: 209 requirements in respect of the following?	
	Diameter	Yes/No
	Strand size	Yes/No
	Direction of lay	Yes/No
	Lay ratio	Yes/No
	Materials	Yes/No

4. Technical data:

Code Name	Nominal Area (sq. mm)	Stranding (Al/Steel)	Breaking Strength (KN)	Mass (kg/km)	Resistance at 20°C (Ohm/Km)
DOG					
RABBIT					
WEASEL					

Signature _____

As representative for _____

Address _____

Date _____

PVC Insulated Cable

	Description	Queries
1.	Manufacturer	
2.	Governing Standard	
3.	Copies of Governing Standard attached?	Yes/No
4.	Copies of tests required by standard attached?	Yes/No
5.	Rating of insulation	Volts.

Signature _____

As representative for _____

Address _____

Date _____

PorcelainInsulators

Pin Insulators

	Description	Queries
1.	Manufacturer	
2.	Catalog	
3.	Model number	
4.	Applicable standards	
5.	Copies of standards attached	Yes/No
6.	If not IS Standards, are standards used equivalent?	Yes/No
7.	Copies of alternate standard attached?	Yes/No
8.		**Ratings:**
	Highest system voltage	kV
	Rated voltage	kV
	Creepage distance (min)	mm
	Wet frequency puncture withstand voltage	kV
	Impulse withstand voltage	kV
	Puncture power frequency voltage (min)	kV
	Visible discharge voltage	kV
	Cantilever strength	kN
	G I pin head	

Signature _____

As representative for _____

Address _____

Date _____

Disc Insulators

	Description	Queries
1.	Manufacturer	
2.	Catalog No.	
3.	Model number	
4.	Applicable standard	
5.	Copies of standards attached? Yes/No	
6.	If not IS standards are standards used equivalent?	Yes/No
7.	Copies of alternate standard attached?	Yes/No
8.	Ratings:	
	Highest system voltage	kV
	Rate voltage	kV
	Porcelain diameter (min)	mm
	Spacing	mm
	Creepage distance (min)	mm
	Power frequency puncture	
	Withstand voltage	kV
	Wet frequency puncture	
	Withstand voltage	kV
	Impulses withstand voltage	kV
	Puncture power frequency voltage (min)	kV
	Visible discharge voltage	kV
	Mechanical strength	kN
	Ball and socket size	mm

Signature _____

As representative for _____

Address _____

Date _____

Stay Insulator

	Description	Queries
1.	Manufacturer	
2.	Catalog No.	
3.	Model number	
4.	Applicable standards	
5.	Copies of standards attached?	Yes/No
6.	If not IS standards, are standards	
	Used equivalent?	Yes/No
7.	Copies of alternate standards attached?	Yes/No
8.	Ratings:	
	Highest system voltage	kV
	Rated voltage	kV
	Creepage distance (min)	mm
	Minimum failing load	kN
	Power frequency withstand voltage, 1 minute	
	Dry	kV
	Wet	kV
	IS designation	

Signature _____

As representative for _____

Address _____

Date _____

Shackle Insulator

Description		Queries
1.	Manufacturer	
2.	Catalog No.	
3.	Standards	
4.	Copies of standards attached:	Yes/No
5.	If not IS standards, are standards used equivalent?	Yes/No
6.	Copies of alternate standards attached?	Yes/No
7.	Ratings:	
	Highest system voltage	kV
	Rated voltage	kV
	Power frequency withstand voltage, 1 minute	
	Dry	kV
	Wet	kV
	Power frequency puncture withstand	
	Voltage, 1 minute	kV
	Leakage distance (min)	mm
	Mechanical strength	kN
	IS designation	

Signature _____

As representative for _____

Address _____

Date _____

Insulator Pins

	Description	Queries
1.	Manufacturer	
2.	Type of steel used	
3.	Dimensional drawings attached?	Yes/No
4.	Copies of type test attached?	Yes/No
5.	Ratings and features	
		For 11 kV
	Head type	
	Total length	mm
	Stalk length	mm
	Shank length	mm
	Minimum failing load	k N
	Applicable standard	
	Catalog number	

Signature _____

As representative for _____

Address _____

Date _____

Disc Insulator Fittings

	Description	Queries
1.	Manufacturer/Catalogue No.	
2.	Preliminary drawings furnished?	Yes/No
3.	Steel Classification	
4.	Malleable tension clamp?	Yes/No
5.	Cotter pin and U-bolts are galvanized?	Yes/No
6.	Cotter pins are stainless steel?	Yes/No
7.	Galvanizing conforms to IS: 2629 – 1985?	Yes/No
8.	Ultimate strength of clamps	
9.	Applicable standard(s)	

Signature _____

As representative for _____

Address _____

Date _____

Shackle Insulator Fittings

	Description	Queries
1.	Manufacturer	
2.	Catalogue no.	
3.	Drawing furnished?	Yes/No
4.	Steel classification	
5.	Reference galvanizing specifications	

Signature _____

As representative for _____

Address _____

Date _____

Cross Arms and Bracing Angles

	Description	Queries
1.	Manufacturer	
2.	Steel Classification	
3.	Minimum tensile strength of steel	
4.	Is the cross arm and angles fabricated from hot-rolled steel sections?	Yes/No
5.	Governing Standard	
6.	Standard attached?	Yes/No
7.	Governing Standard for galvanizing	
8.	Drawings of cross arm and bracing?	Yes/No

Signature _____

As representative for _____

Address _____

Date _____

Flat Cross Arm Brace

	Description	Queries
1.	Manufacturer	
2.	Steel Classification	
3.	Minimum tensile strength of steel	
4.	Is the flat cross arm brace fabricated from hot-rolled steel sections?	Yes/No
5.	Governing Standard for manufacturing and testing	
6.	Governing Standard for galvanizing	
7.	Standards attached?	Yes/No
8.	Drawings of flat cross arm brace?	Yes/No

Signature _____

As representative for _____

Address _____

Date _____

Transformer Platforms

	Description	Queries
1.	Manufacturer	
2.	Preliminary details drawing furnished?	Yes/No
3.	Steel classification/ characteristics furnished?	Yes/No
4.	Governing standard for galvanization	
5.	Vertical load on pole	
6.	Resultant safety factor	
7.	Resultant deflection at design load	mm
8.	% of allowable tension	
9.	% of allowable compression	
10.	% of allowable shear limits	

Signature _____

As representative for _____

Address _____

Date _____

Pole Clamps

	Description	Queries
1.	Manufacturer	
2.	Steel classification	
3.	Referenced galvanizing specification	
4.	Drawings of pole clamp furnished?	

Signature _____

As representative for _____

Address _____

Date _____

Galvanized Steel Nuts and Bolts

	Description	Queries
1.	Manufacturer	
2.	Material description Furnished?	Yes/No
3.	Governing standard for manufacturing and testing	
4.	Governing standard for galvanization	
5.	Standards attached?	Yes/No
6.	Catalog numbers attached for all items?	Yes/No

Signature _____

As representative for _____

Address _____

Date _____

Ground (Earth) Rods and Clamps

	Description	*Queries*
1.	Manufacturer	
2.	Material Description furnished?	Yes/No
3.	Governing Standard for manufacturing and testing	
4.	Governing Standard for galvanization	
5.	Standards attached?	Yes/No
6.	Catalog/ dimensional drawings attached for all items?	Yes/No
7.	Dimensions (Ground Rod):	
	Length	mm.
	Diameter	mm.
8.	Catalog number	
	Rod	
	Clamp	
9.	Copies of type test results attached?	Yes/No

Signature _____

As representative for _____

Address _____

Date _____

Grounding Conductor

	Description	Queries
1.	Manufacturer	
2.	Governing Standard for manufacturing and testing	
3.	Governing Standard for galvanization	
4.	Standards attached?	Yes/No
5.	Diameter	mm
6.	Cross Section	sq. mm
7.	Short time fusing 30 cycles	Amps
8.	Weight (Approx.)	kg/km
9.	Resistance at 20 degree C (Approx.)	ohms/km

Signature _____

As representative for _____

Address _____

Date _____

Universal Parallel Groove (UPG) Clamp

	Description	Queries
1.	Manufacturer	
2.	Material Description furnished?	Yes/No
3.	Governing Standard for manufacturing and testing	
4.	Governing Standard for galvanization	
5.	Standards attached?	Yes/No
6.	Catalog/ dimensional drawings attached?	Yes/No

Signature _____

As representative for _____

Address _____

Date _____

Compression Connectors

	Description	Queries
1.	Manufacturer	
2.	Material Description furnished?	Yes/No
3.	Governing Standard for manufacturing and testing	
4.	Standards attached?	Yes/No
5.	Catalog/ dimensional drawings attached?	Yes/No

Signature _____

As representative for _____

Address _____

Date _____

Stay Rod

	Description	Queries
1.	Manufacturer	
2.	Catalogue Numbers	
3.	Steel Classification	
4.	Load rating	kg
5.	Type tests-tensile load data attached?	Yes/No
6.	Type test-bend test data attached?	Yes/No
7.	Drawing attached?	Yes/No

Signature _____

As representative for _____

Address _____

Date _____

Stranded Stay Wire

	Description	Queries
1.	Manufacturer	
2.	Strand diameter (overall)	mm
3.	No. of Strands	
4.	Minimum Breaking load	kg
5.	Nominal diameter of coated	
6.	Left hand lay	Yes/No
7.	Fabrication Specification	
	B.S. 183 1972 (1983)	mm
8.	If not what standard?	Yes/No
9.	Standard copies (2) attached	Yes/No
10.	If not B.S. 183 is strand offered equivalent in all	
	respects?	Yes/No
11.	Class of zinc coating?	

Signature _____

As representative for _____

Address _____

Date _____

Distribution Transformer

(To be completed by Bidder for each transformer rating)

Item		Description
1.	Manufacturer	
2.	Copies of IEC standards attached?	Yes/No
3.	Copies of type test for each rating attached?	Yes/No
4.	Copies of outline drawings for each size attached?	Yes/No
5.	Winding material:	_____
6.	Primary Winding BIL	_____kV
7.	Primary Bushing BIL	_____kV
8.	Accessories listed below furnished?	
	a) Lower oil filter valve	Yes/No
	b) Liquid level gauge	Yes/No
	c) Lifting lugs	Yes/No
	d) Hand hole	Yes/No
	e) Tank earthing terminal	Yes/No
	f) Overload protection	Yes/No
	If yes, details attached?	Yes/No

9. Testing facilities available at Manufacturer's Plant

Description	Name of the test equipment/facility
Applied voltage test	
Induced voltage test	
No load loss and excitation current test	
Impedance voltage and load loss tests	
Resistance measurement	
Ratio tests	
Polarity and phase relation tests	
Leakage tests	
Insulation resistance tests	
Temperature rise test	
Dielectric Type test	
Tank pressure test	

10. Design information

Rated kVA (IEC rating), kVA……..

Number of phases ….....…….

Frequency, Hz .....

Voltage ratio at no-load , kV.....

Winding connections.....

Type of core sheet……

Magnetising current at normal ratio:

hv, Amp …….

lv, Amp ……..

Maximum flux density in core iron at normal

voltage and frequency based on the net section of iron:

Cores, T ……

Yokes, T ……..

Type of winding:
hv .. ……..

lv …….

Maximum current density in winding at rated power:

hv, Amp/mm^2 …….

lv, Amp/mm^2 ……..

Type of insulation used for:

hv winding …….

lv winding ……..

No-load loss at normal voltage ratio and 75°C, Watt .....

Load loss at rated current and at 75°C, Watt .....

Regulation at 75°C and rated power as a percentage of normal voltage:

at 1 p.f, % ……

at 0.8 p.f, % .....

Impedance voltage at 75°C and rated power:

at normal tapping,% ……..

at -5% tapping % ……

at +5% tapping % ……

Efficiency at 1p.f and 125% load, % .....
Efficiency at 1p.f and 100% load, % .....
Efficiency at 1p.fand 75% load, % .....
Efficiency at 1p.fand 50% load, % .....
Efficiency at 1p.fand 25% load, % .....

Load at which maximum efficiency will occur, % …….

Maximum efficiency, % ……..

Temperature rise at rated kVA by

thermometer in oil .....

Temperature rise at rated kVA by

resistance of windings .....

Permissible overload .....

Transformer insulating oil specification ……...

Total volume of insulating oil at 20°C, litre ……..…

Effective expansion capacity of conservator, litre …….

11 Approximate weight and dimensions

Weight of core, kg.....

Weight of winding, kg, ……..

Weight of tank and fittings, kg.....

Weight of oil , kg.....

Total weight, kg.....

12 Radiator details

No of radiators per transformer, no ……

No. of fins per radiator, no ……..

Width of each fin, mm ……..

Thickness of radiator, mm……

13 Tank dimensions

Length, mm ……..

Breadth, mm ……

Height, mm ……..

Tank sheet thickness (sides x bottom x top), mm ……

14 Approximate dimensions including fittings:

Overall length, mm.....

Overall width, mm.....

Overall height, mm.....

15. Winding resistance values

Per phase resistance of HV winding AB .....BC ..... CA .....

Per phase resistance of HV winding an .....bn ..... cn .....

Signature _____

As representative for _____

Address _____

Date _____

Surge Arrester

	Description	Queries
1.	Manufacturer	
2.	Catalog numbers	
3.	Governing standard	
4.	Copies of standard attached?	Yes/No
5.	Certification	
6.	Copies of certified type tests attached?	Yes/No
7.	Copy of certified type test attached?	Yes/No
8.	Surge arrester type	
7.	Pressure relief provided	Yes/No
8.	Ground lead disconnector provided	Yes/No
9.	Ratings:	
	System voltage	kV
	Maximum system voltage	kV
	Voltage rating (Ur), Vrms	kV
	System frequency	Hz
	Nominal discharge current	kA
	Creepage distance	mm
	Minimum power frequency withstand:	
	Wet	kV
	Dry	kV
	Pressure relief class	

Signature _____

As representative for _____

Address _____

Date _____

Distribution Cutout

	Description	Queries
1.	Manufacturer	
2.	Catalog Numbers	
3.	Applicable standard	
4.	Certification	
5.	Copies of standard attached?	Yes/No
6.	Copy of certified type tests attached?	Yes/No
7.	Clamp type terminals for	
	Copper / aluminium cable 25-150mm^2?	Yes/No
8.	Ratings:	
	System voltage	kV
	Design ratings	kV
	System frequency	Hz
	Max. design rating	kV
	Minimum power frequency withstand	
	Dry	kV
	Wet	kV
	Impulse withstand	kV
	Creepage distance	mm
9.	Interrupting capacity	kA

Signature _____

As representative for _____

Address _____

Date _____

Fuse Link

Description		Queries
1.	Manufacturer	
2.	Catalog Numbers	
3.	Governing standard	
4.	Copies of standard attached?	
5.	Time Curves attached	
	Minimum melting time	Yes/No
	Total clearing time	Yes/No
6.	Preload adjustment data attached?	Yes/No
7.	Ambient temperature adjustment data attached?	Yes/No

Signature _____

As representative for _____

Address _____

Date _____

Moulded Case Circuit Breakers

	Description	Queries
1.	Manufacturer	
2.	Catalog number	
3.	Model offered	
4.	Applicable standard	
5.	Certification	
4.	Copies of standards attached?	Yes/No
5.	Copies of certified type tests attached?	Yes/No
6.	Copies of outline drawings attached?	Yes/No
7.	Copies of time – current characteristics trip curves for each breaker rating attached?	Yes/No
8.	Ratings:	
	Rated voltage	Volts
	Number of poles	
	Ambient Temperature	Deg. C
	Nominal rating current	Amperes
	Rated breaking capacity	kA
	Impulse withstand voltage	kV
	Interrupting capability	
	Line load reversibility	Yes/No
	All bid documents furnished?	Yes/No
	All other features provided?	Yes/No

Signature _____

As representative for _____

Address _____

Date

Distribution Panel Board

	Description	Queries
1.	Manufacturer	
2.	Fabrication drawings copies attached?	Yes/No
3.	Attached description of all materials used?	Yes/No
4.	Furnished description of cable entrance fittings?	Yes/No

Signature _____

As representative for _____

Address _____

Date _____

Disconnect Switch

	Description	Queries
1.	Manufacturer	
2.	Catalog number	
3.	Copy of test data per	
	IEC Standard 265 attached?	Yes/No
4.	Rating:	
	Design Voltage	kV
	Continuous Current	Amps
	Momentary rating (r.m.s)	Amps
	Impulse Withstand (BIL)	kV
	Min Power Frequency	
	Withstand:	
	1 minute dry	kV
	10 seconds wet	kV
	Insulator creepage distance	mm
	Insulator dry arc distance	mm
	Open gap dry arc distance	mm
5.	Dimensioned drawing attached?	Yes/No

Signature _____

As representative for _____

Address _____

Date _____

Steel Tubular Poles

S. No.	Description	Unit	11m.	8 m.
a)	Manufacturer			
b)	Governing Standards for tubing Manufacturing and Testing			
c)	Governing Standard for Galvanization			
d)	Copies of Standards Attached?	**Yes/No**		
e)	Overall Length	(m)		
f)	Sections details:			
	(i)Length, m			
	Top (h1)			
	Middle (h2)			
	Bottom (h3)			
	ii) Outside Diameter, mm			
	Top (h1)			
	Middle (h2)			
	Bottom (h3)			
	iii) Thickness, mm			
	Top (h1)			
	Middle (h2)			
	Bottom (h3)			
	Approximate weight, Kg			
	Criplling load, kgf			
	Application of load from top of pole, m			

Signature _____

As representative for _____

Address _____

Date _____

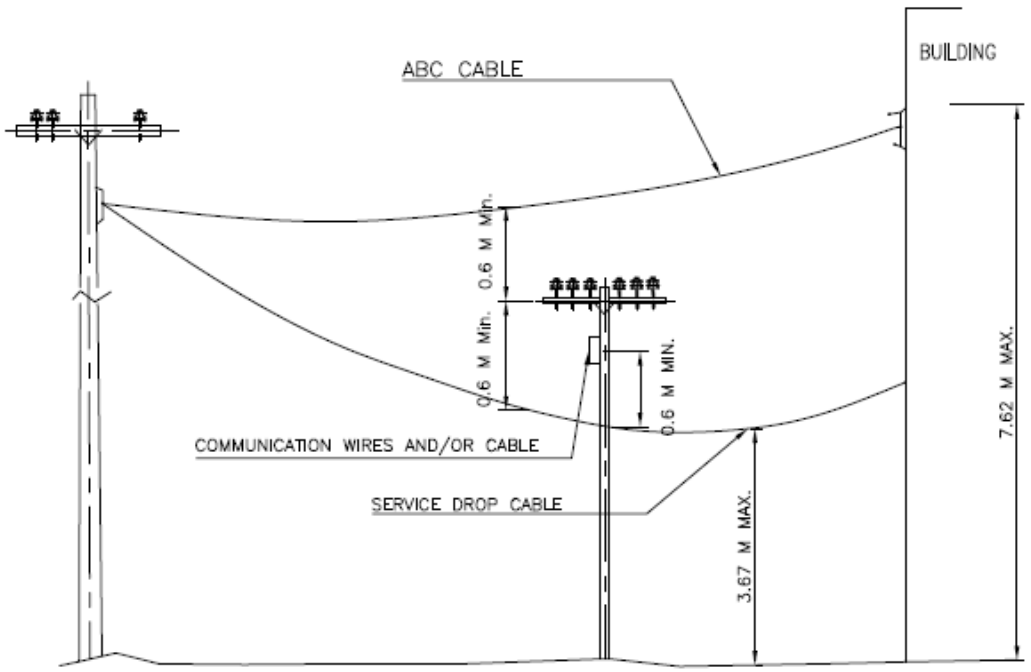
Drawings

Note:

1. It is customary to bind the drawings in a separate volume, which is often larger than other volumes of the contract documents. The size will be dictated by the scale of the drawings, which must not be reduced to the extent that details are reduced illegible.

2. A simplified map showing the location of the Site in relation to the local geography, indicating major roads, posts, airports, and railroads, is helpful.

3. The construction drawings, even if not fully developed, must show sufficient details to enable bidders to understand the type and complexity of the work involved and the price the Bill of Quantities.



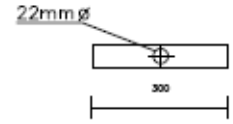
SERVICE DROP

Install service over communication facilities where practical and attach to ploe when available; otherwise cross under communication facilities; with proper clearance.

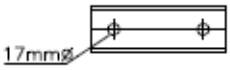
SERVICE DROP (0–600V) CROSSING OVER	CLEARANCE
DRIVEWAY TO RESIDENCE GARAGE OF OVER PARKING LOT EXCLUDING TRACKS	3.67 M.
DRIVEWAY AND COMMERCIAL PARKING LOT OR AREA SUBJECT TO TRUCK TRAFFIC	4.57 M.

Drawing	Conductor Clearance	*Nepal Electricity Authority*
CSG-CLR-02		***Butwal Regional Office***

POLE TOP CROSS ARM

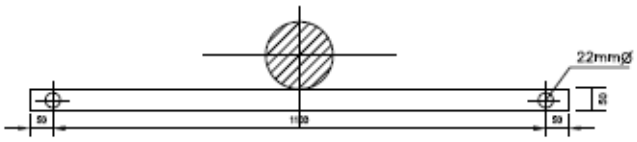


TOP VIEW

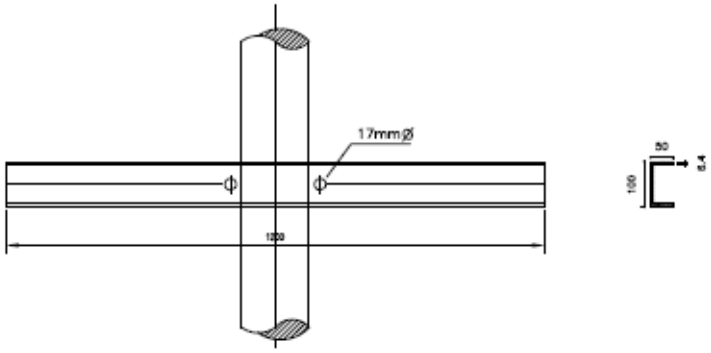


FRONT VIEW

STANDARD CROSS ARM



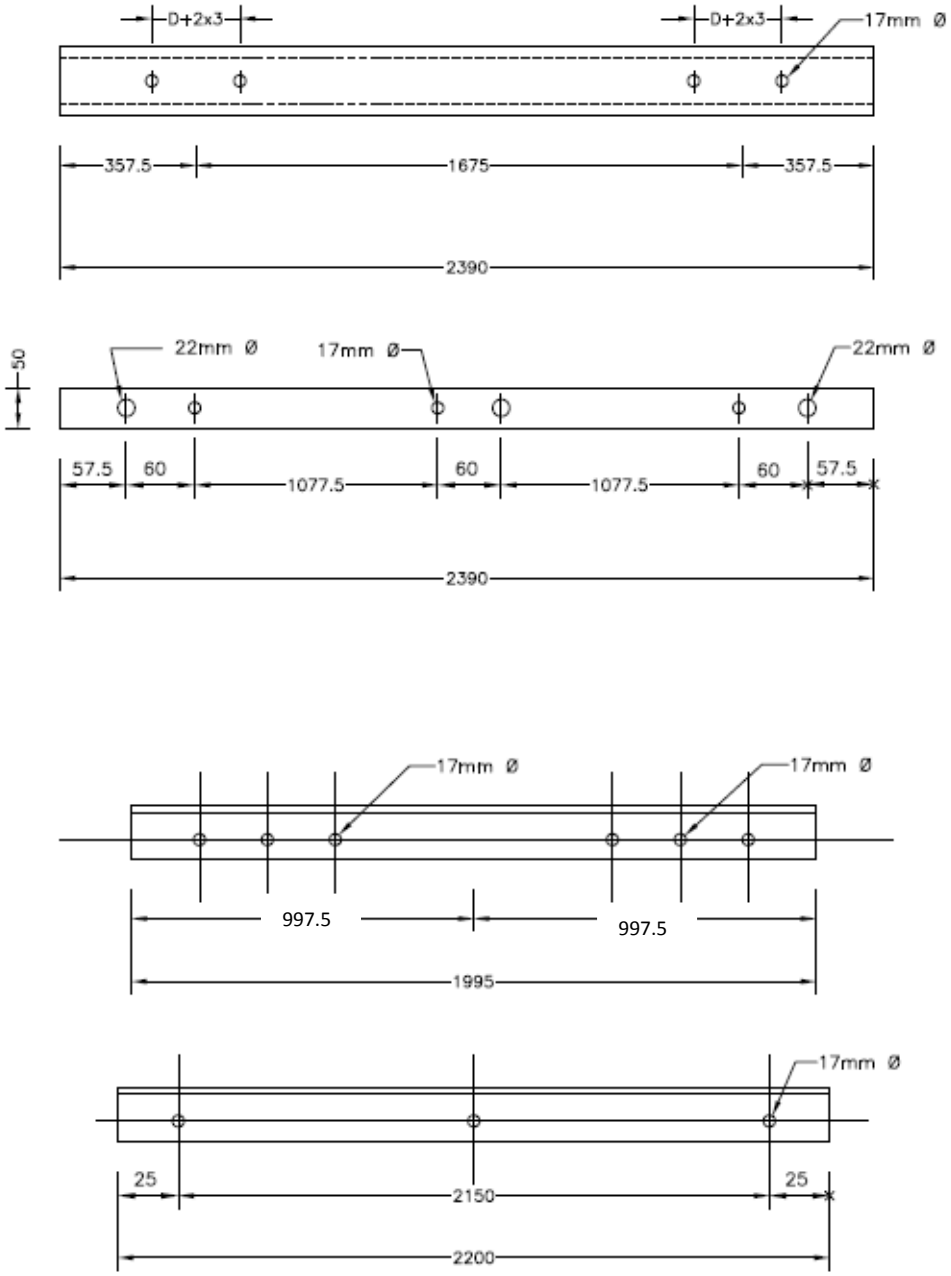
TOP VIEW



FRONT VIEW

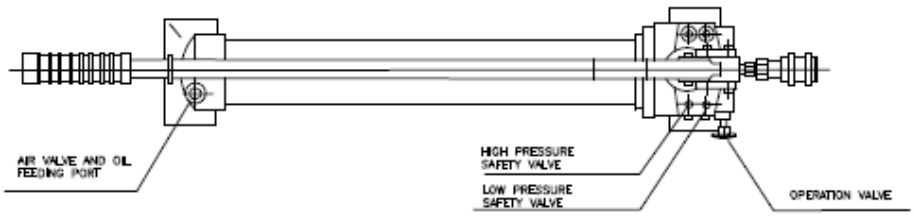
LOCATION OF HOLES TO BE CONFIRMED PRIOR TO MANUFACTURE

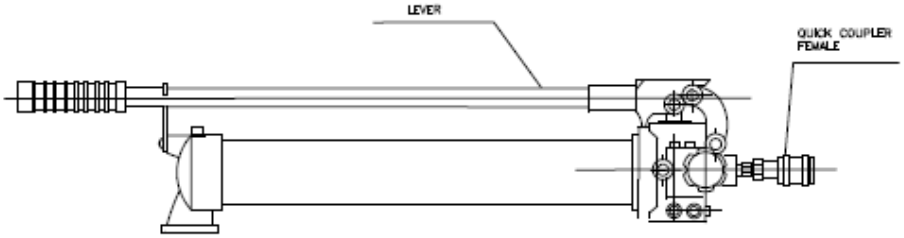
Drawing	Standard Crossarm	*Nepal Electricity Authority*
CS11-LM-01	11 kV Single Pole Structure	*Butwal Regional Office*

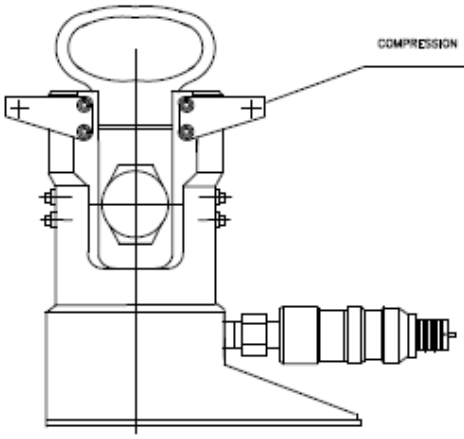


LOCATION OF HOLES TO BE CONFIRMED PRIOR TO MANUFACTURE

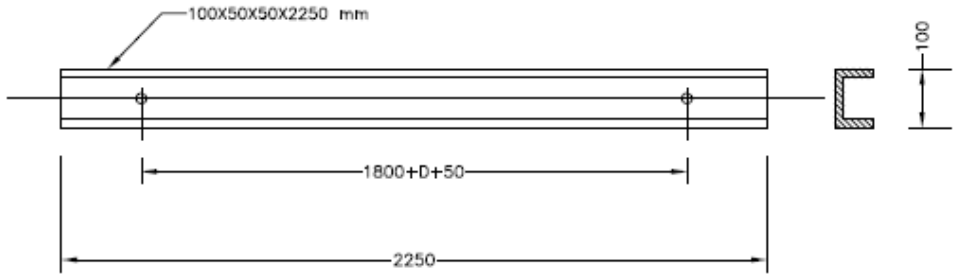
Drawing No.: CS11–LM–02	Crossarm & Bracing for **11 kV Double Pole (Dead End Type)**	***Nepal Electricity Authority*** ***Butwal Regional Office***

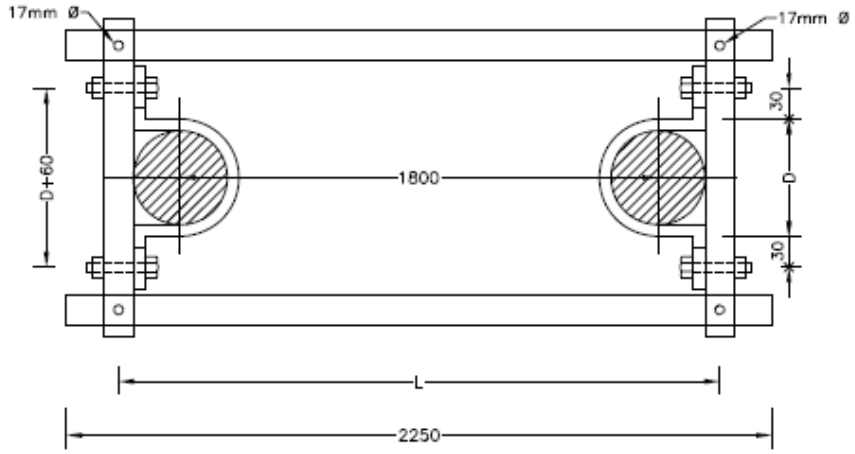


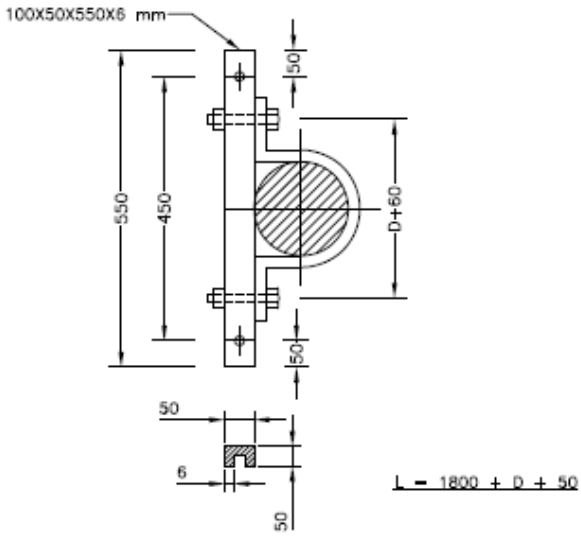




Drawing CS11-LM-03	Copression Tool	*Nepal Electricity Authority* *Butwal Regional Office*

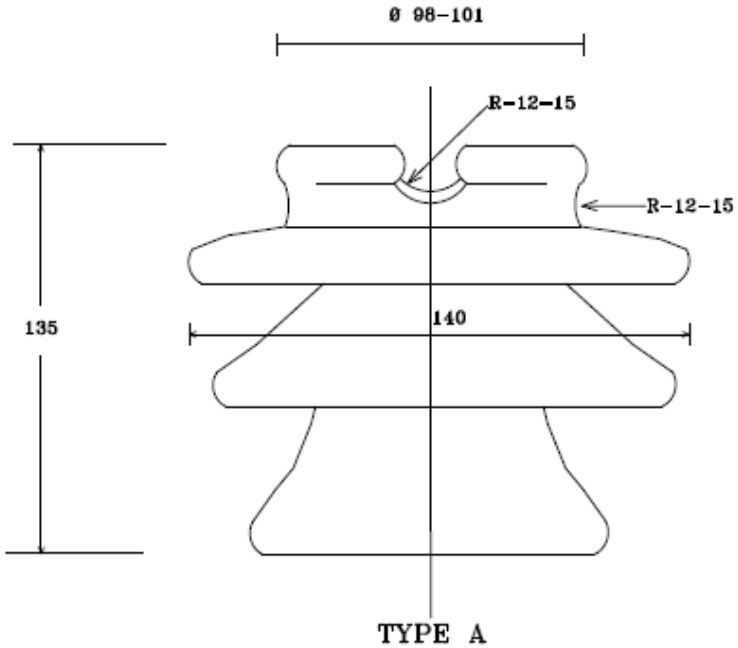






D = DIAMETER OF THE POLE

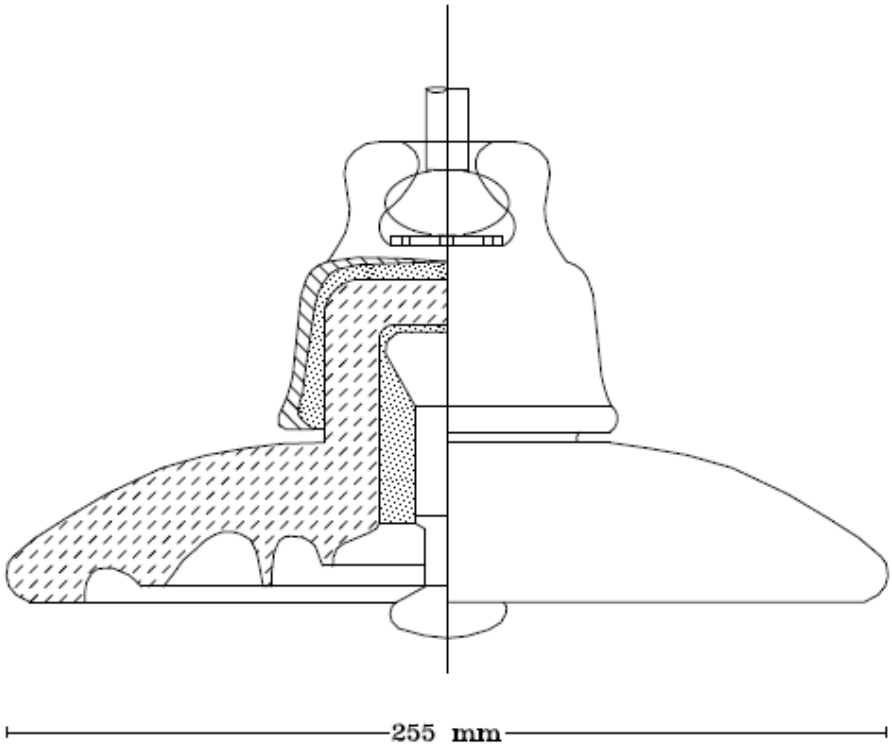
Drawing CS11-LM-04	Transformer Platform	*Nepal Electricity Authority* *Butwal Regional Office*



TYPE A

Applicable Standard IS : 731

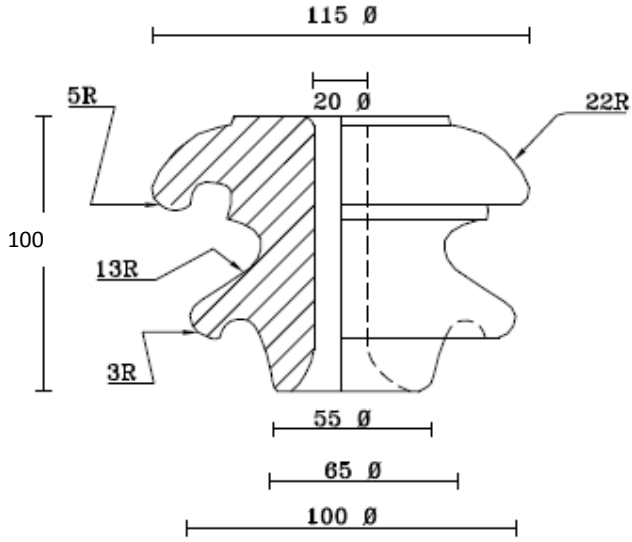
Drawing		
CS11-LM-05	11 kV Pin Insulator	***Nepal Electricity Authority*** ***Butwal Regional Office***



Applicable Standard IS : 731 & IS : 3188

Drawing		
CS11-LM-06	**Disc Insulator**	***Nepal Electricity Authority*** ***Butwal Regional Office***

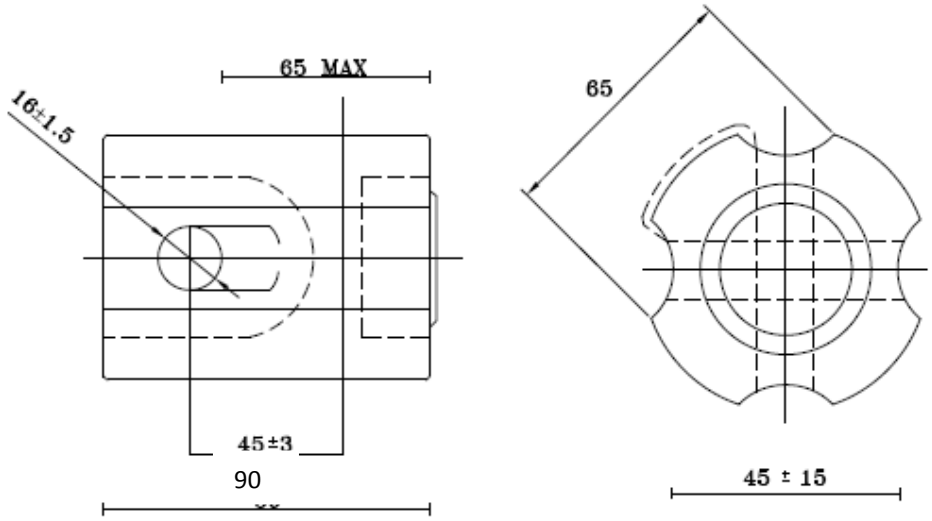
Shackle Insulator



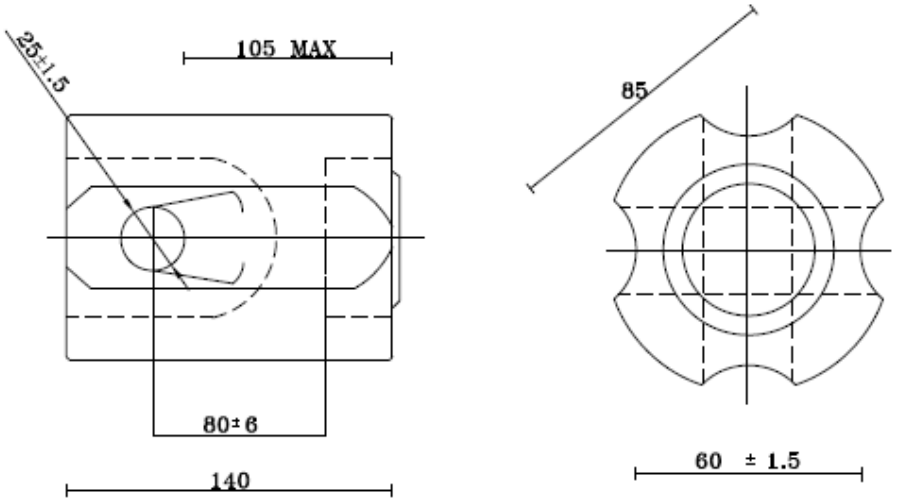
TYPE –A

Applicable Standard IS : 1445

Drawing		
CS11-LM-07	Shackle Insulator	*Nepal Electricity Authority* *Butwal Regional Office*



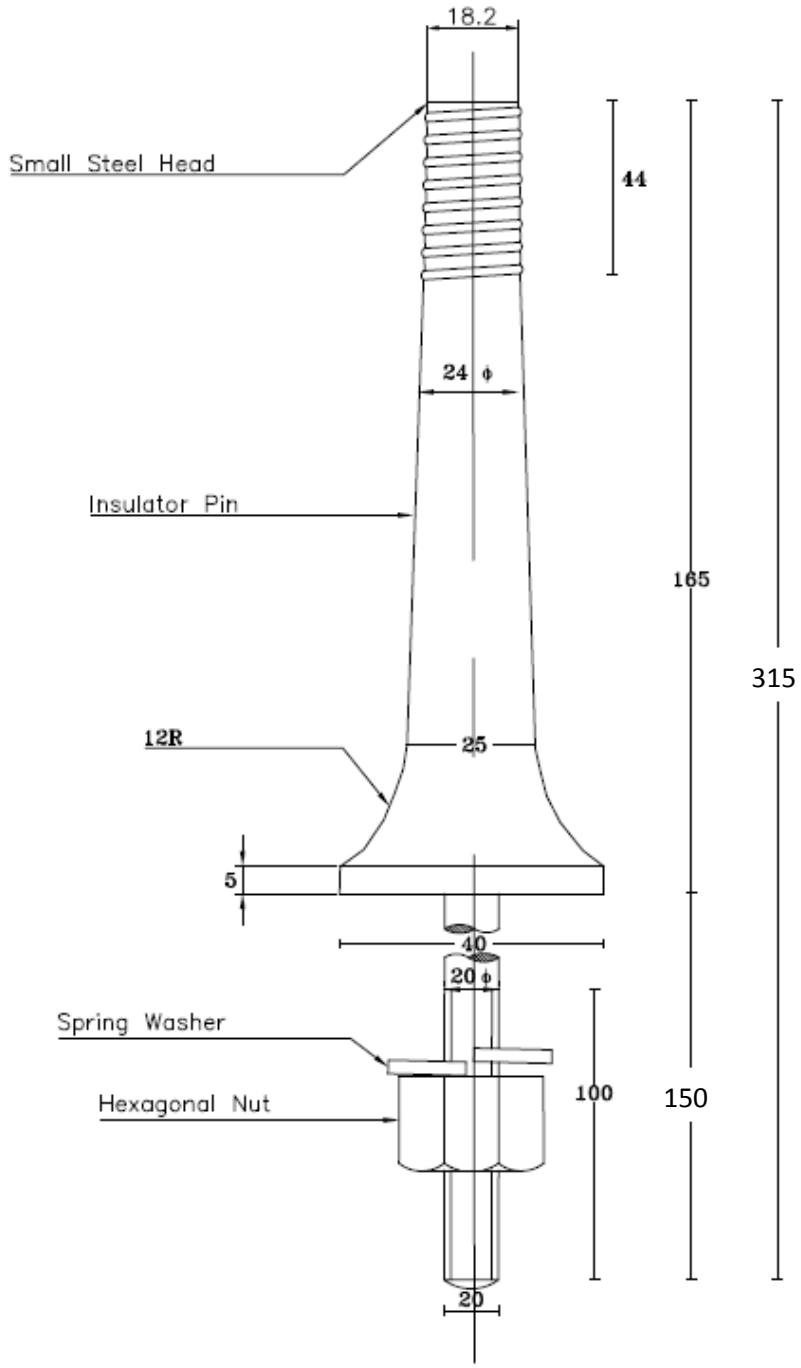
TYPE – 2



TYPE – 1

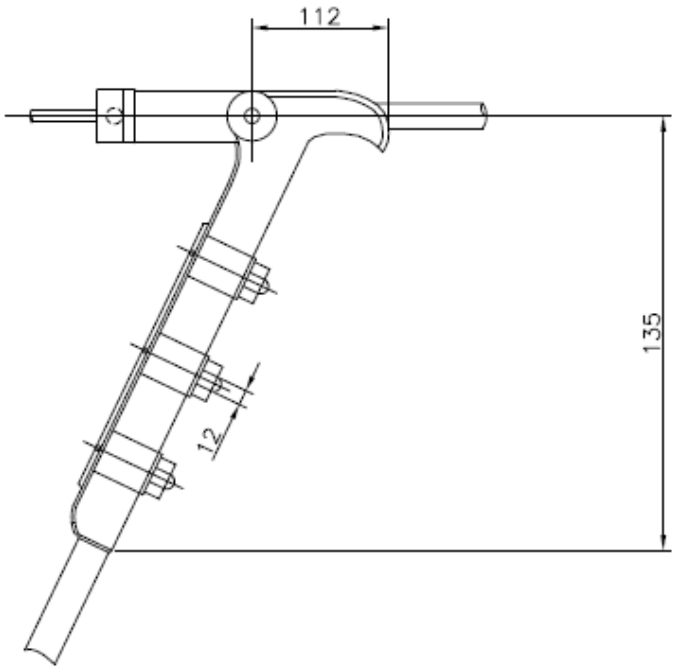
Applicable Standard IS : 5300

Drawing		
CS11-LM-08	Stay Insulator	***Nepal Electricity Authority*** ***Butwal Regional Office***



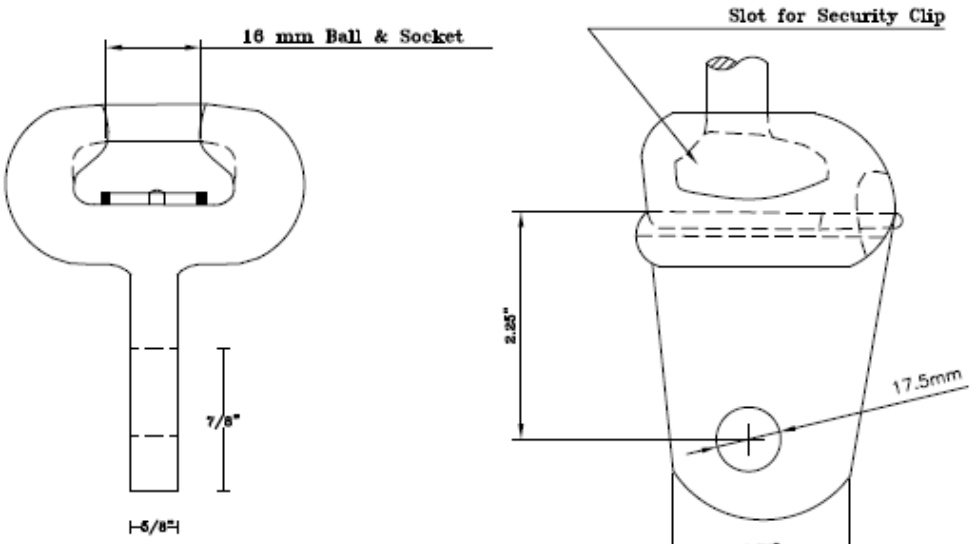
TYPE SI 65 P IS:2486 (PART I)

Drawing		
CS11-LM-09	**Insulator Pin**	***Nepal Electricity Authority*** ***Butwal Regional Office***

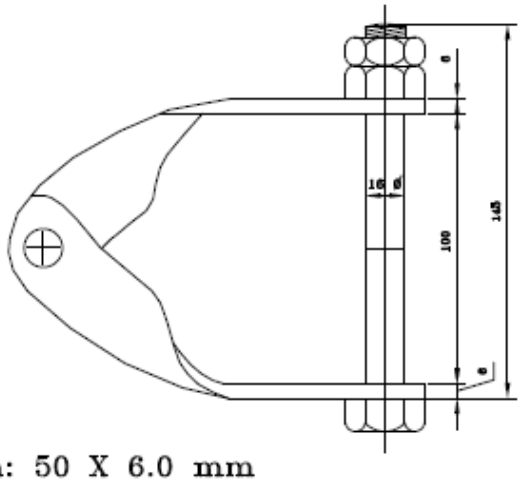


TYPE A (Straight Type)

Drawing		
CS11-LM-10	Tension Clamp	*Nepal Electricity Authority* *Butwal Regional Office*



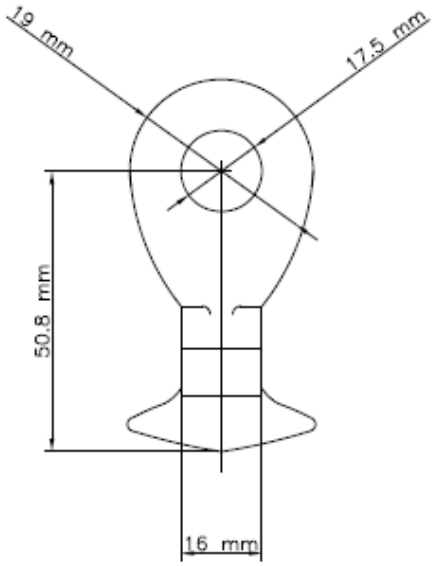
SOCKET EYES

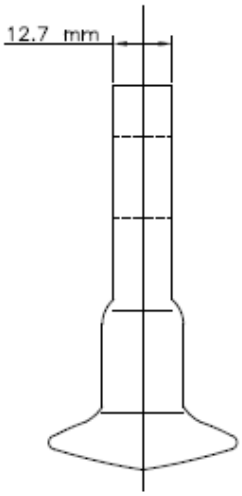


Section: 50 X 6.0 mm

BACK STRAP

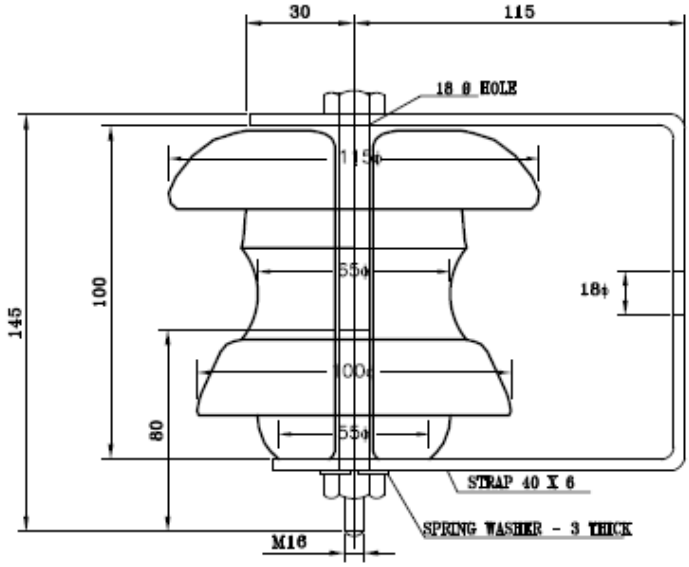
Drawing CS11-LM-11	Hardwares for Tension Set	*Nepal Electricity Authority* *Butwal Regional Office*





BALL EYES

Drawing **CS11-LM-12**	**Hardwares for Tension Set**	***Nepal Electricity Authority*** ***Butwal Regional Office***

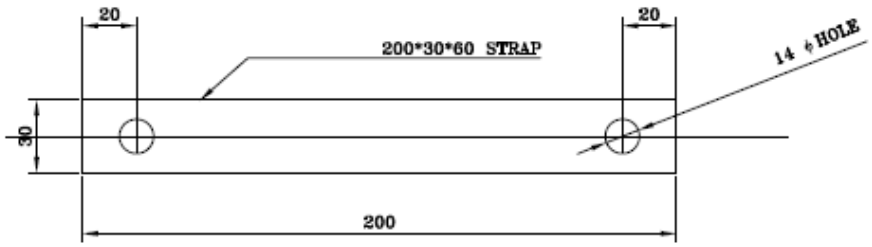


TYPE 2

1	STRAP - 40 X 6	1
2	BOLT - 160 X 145	1
3	SPRING WASHER - 3 THICK	1
4	HEXAGONAL NUT	1

NOTES :-

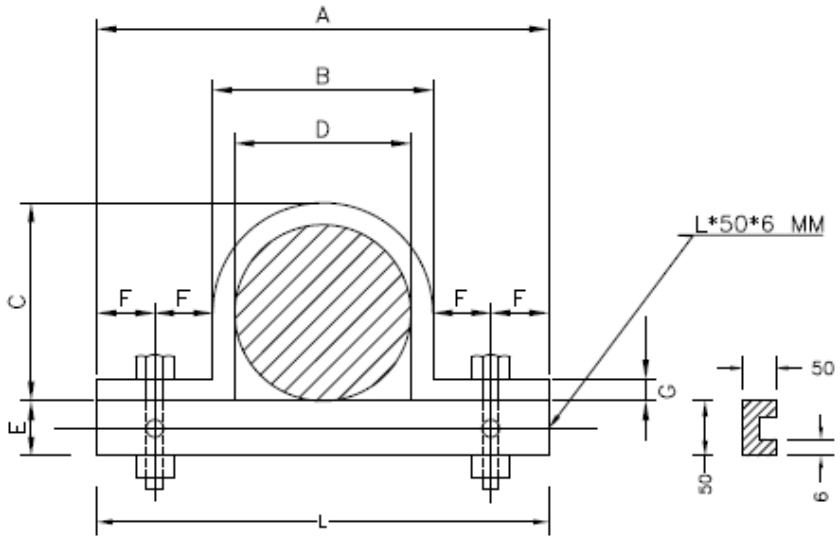
1. ALL FITTINGS HOT DIP GALVANISED
2. FITTINGS AS PER IS 7935 - 1975



EXTENSION STRAP

ALL DIMENSIONS AS PER IS 7935 - 1975

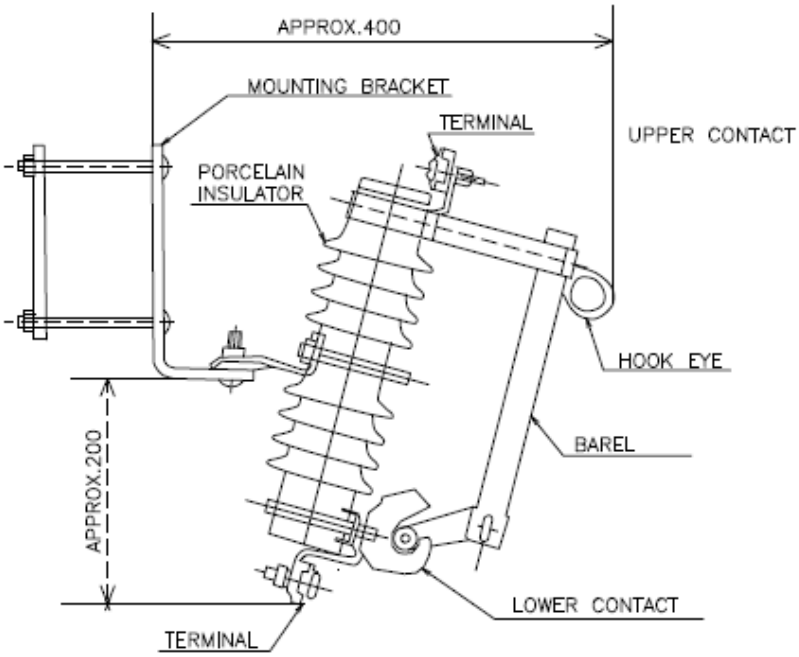
Drawing CS11-LM-13	Shackle Insulator Fittings (D-Iron)	*Nepal Electricity Authority* *Butwal Regional Office*

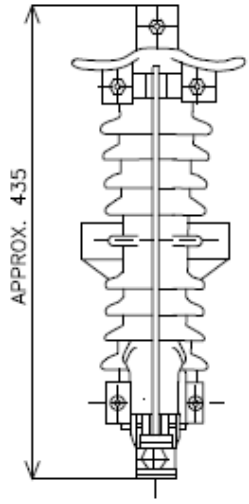


D (Pole Dia.)	A	B	C	E	F	G
88.9	200.9	100.9	94.9	50	25	6
114.3	226.3	126.3	120.3	50	25	6
139.7	251.7	151.7	145.7	50	25	6
165.1	277.1	177.1	171.1	50	25	6

ALL DIMENSIONS ARE IN MM

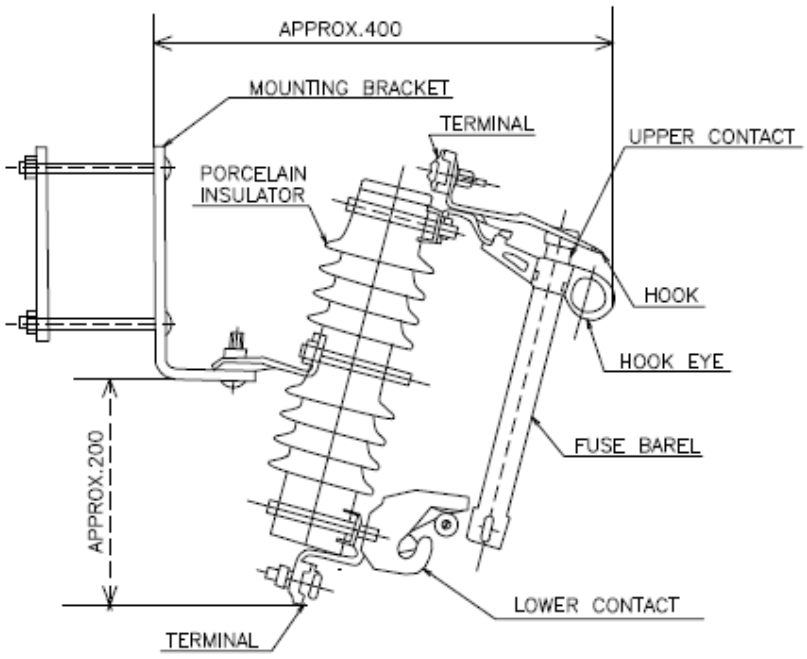
Drawing CS11-LM-14	**Pole Clamp (Tubular Poles)**	***Nepal Electricity Authority Butwal Regional Office***

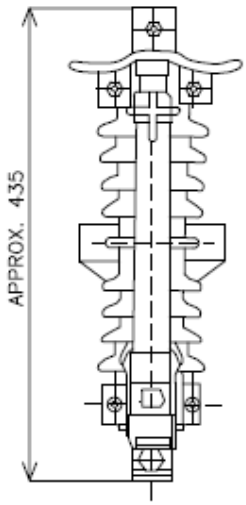




Terminal : Bolted Type Suitable for copper wire 8mm Porcelian color : Brown/white

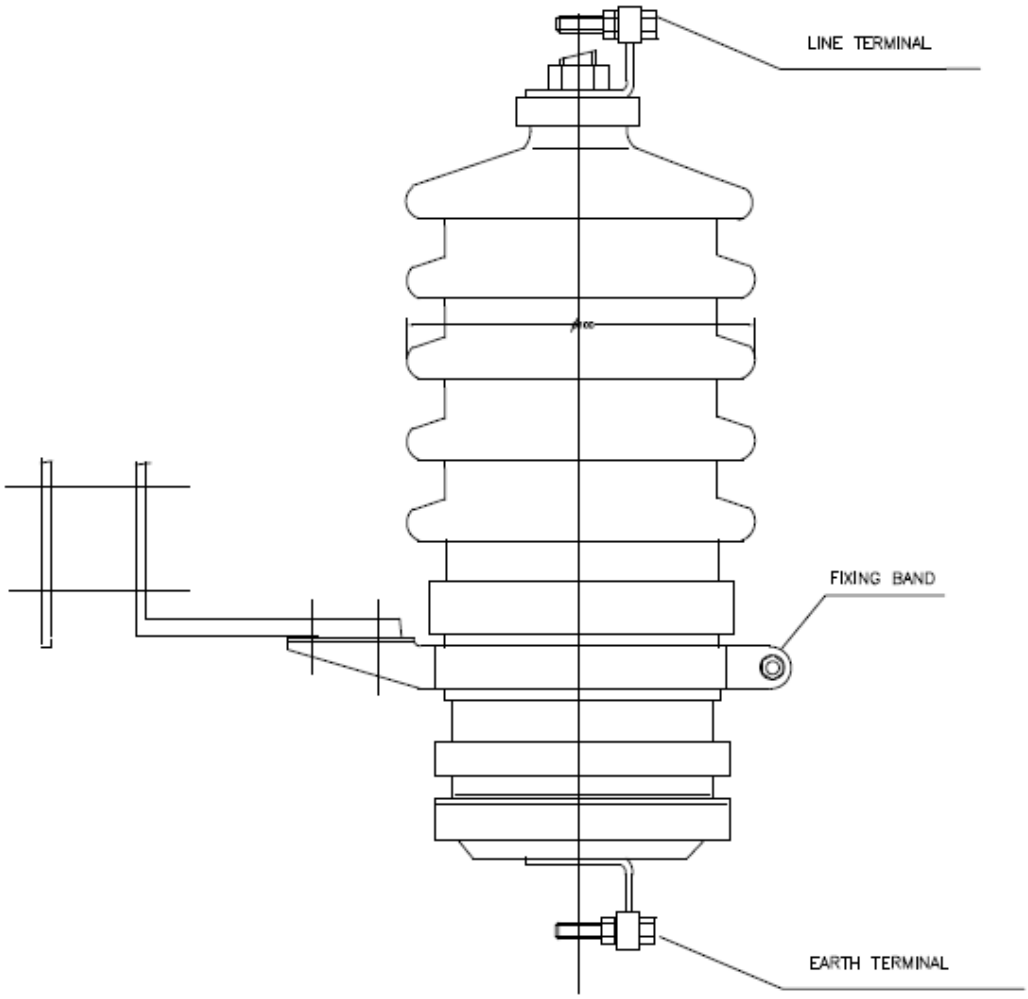
Drawing		
CS11-LM-16	**Disconnet Switch**	***Nepal Electricity Authority*** ***Butwal Regional Office***



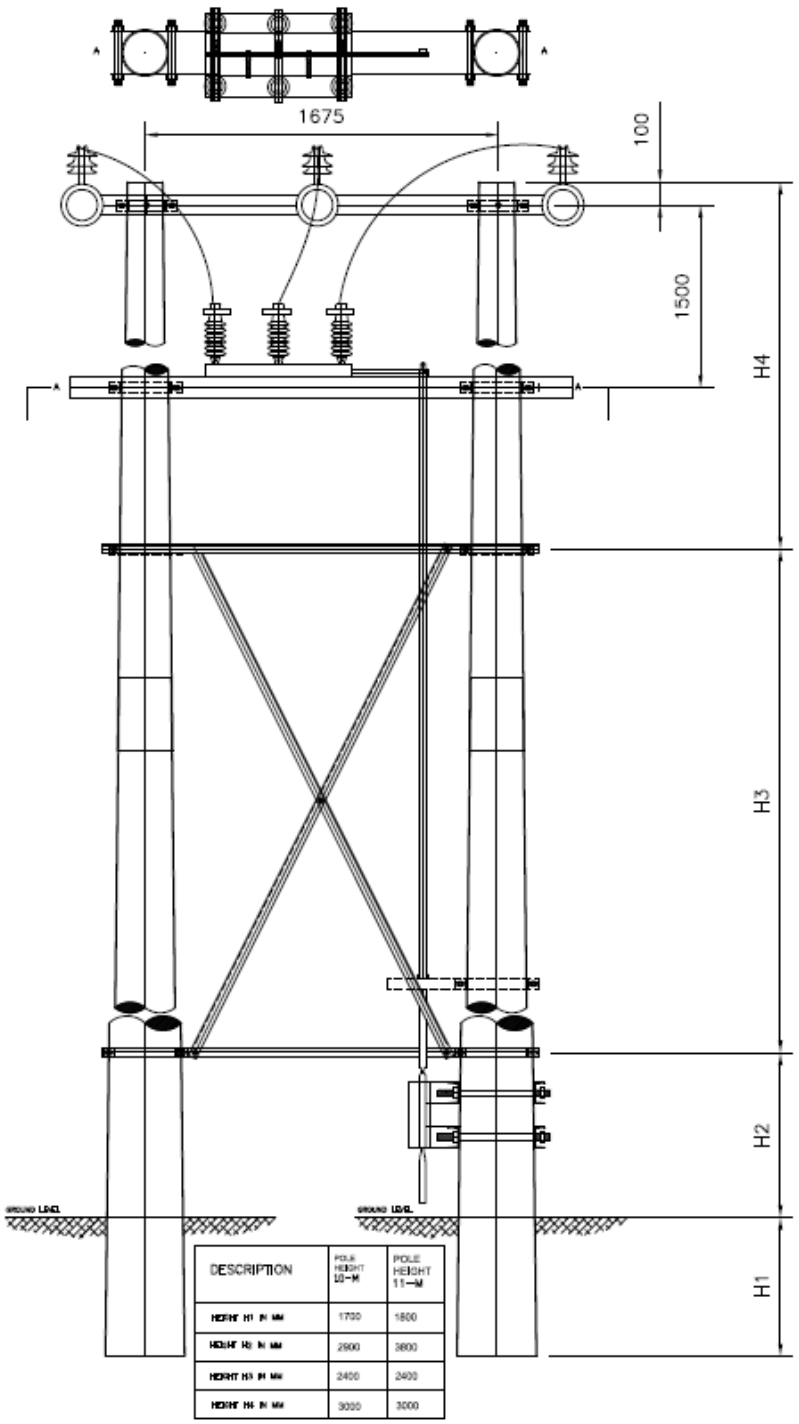


Terminal : Bolted Type Suitable for copper wire 8mm Porcelian color : Brown/white

Drawing CS11-LM-17	Cut Out Switch	*Nepal Electricity Authority* *Butwal Regional Office*

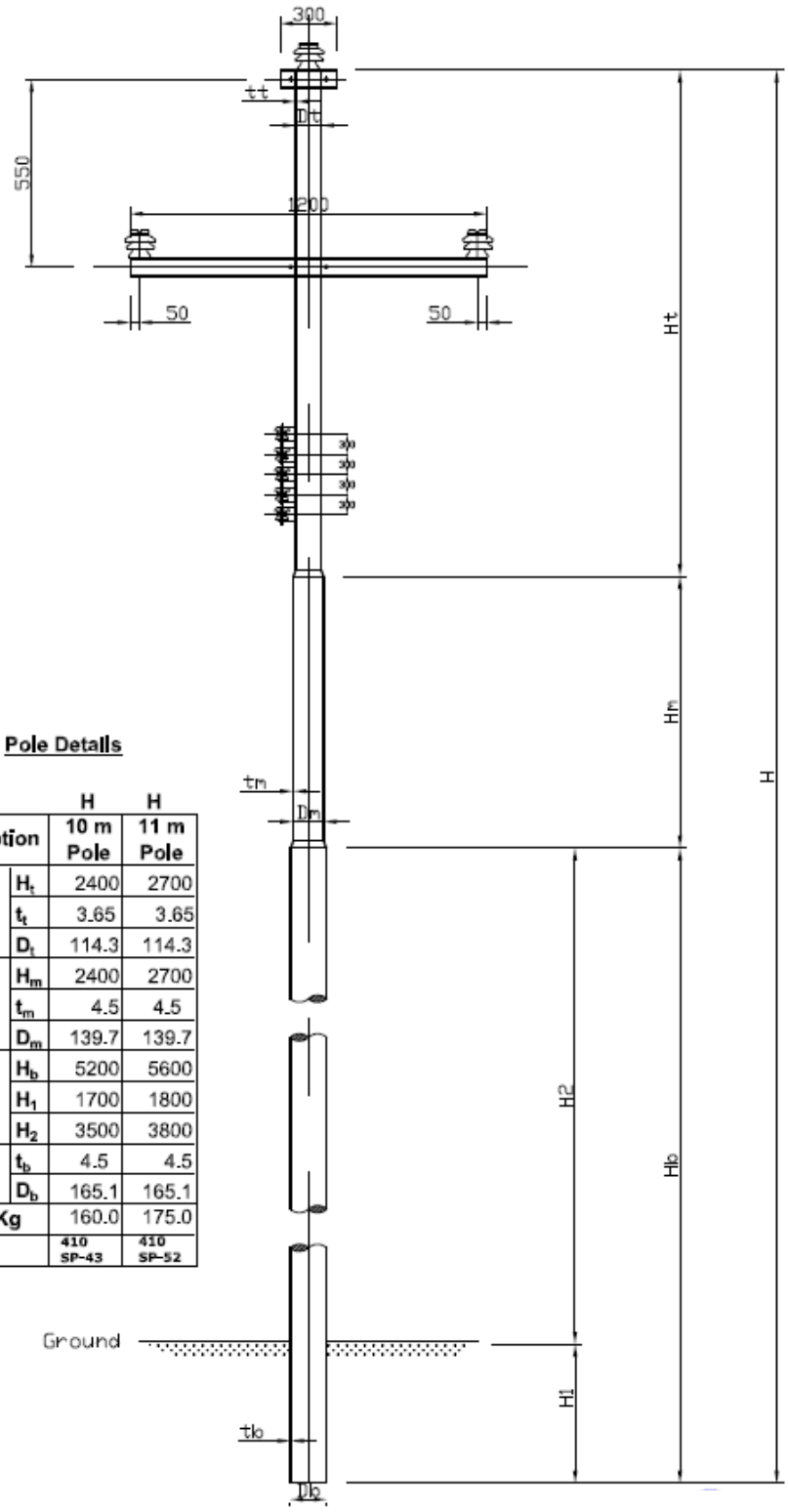


Drawing		
CS11-LM-18	**Lightning Arrester**	***Nepal Electricity Authority*** ***Butwal Regional Office***



DESCRIPTION	POLE HEIGHT 10-M	POLE HEIGHT 11-M
HEIGHT H1 IN MM	1700	1800
HEIGHT H2 IN MM	2900	3800
HEIGHT H3 IN MM	2400	2400
HEIGHT H4 IN MM	3000	3000

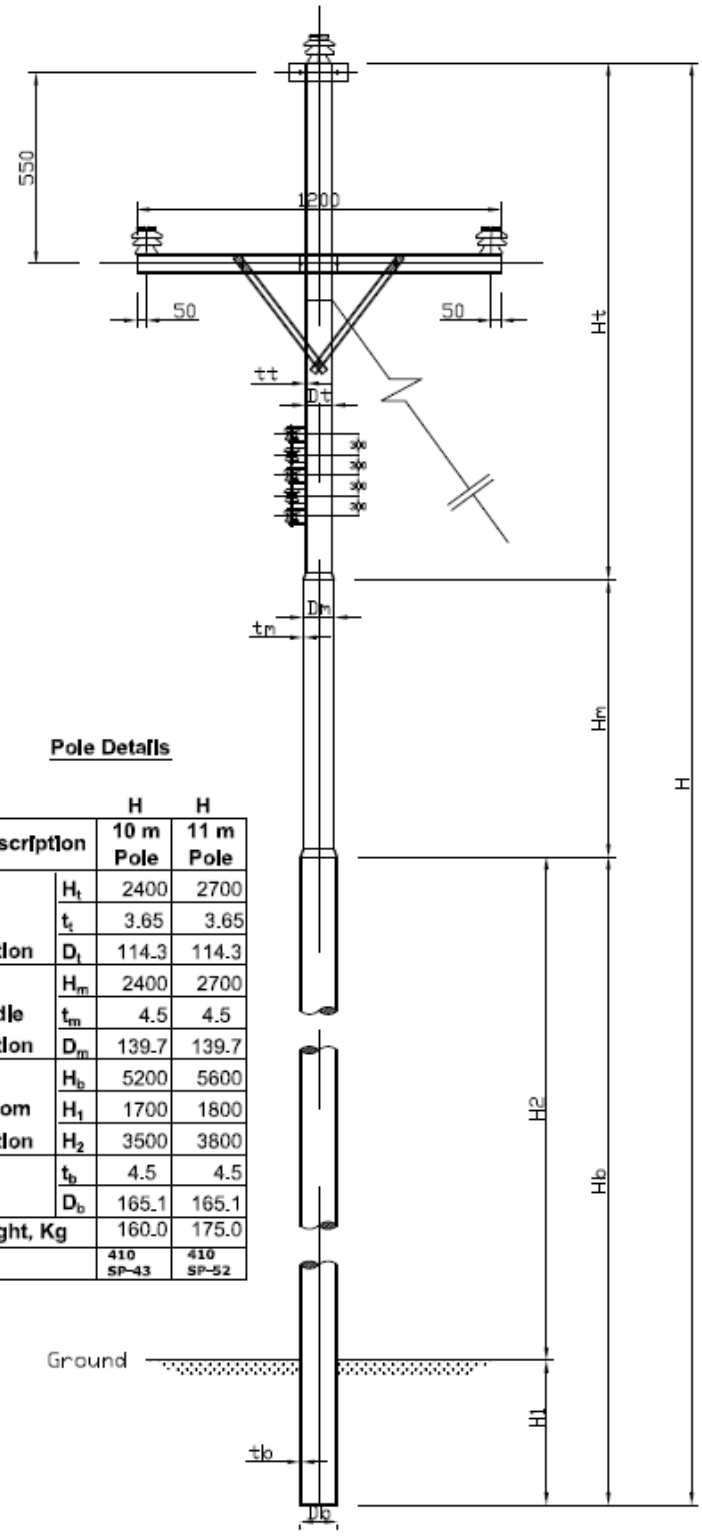
Drawing **CS11-LM-19**	**10/11 m Pole Mounting Disconnet Switch**	***Nepal Electricity Authority*** ***Butwal Regional Office***



Pole Details

Description		H 10 m Pole	H 11 m Pole
Top Section	H_t	2400	2700
	t_t	3.65	3.65
	D_t	114.3	114.3
Middle Section	H_m	2400	2700
	t_m	4.5	4.5
	D_m	139.7	139.7
Bottom Section	H_b	5200	5600
	H_1	1700	1800
	H_2	3500	3800
	t_b	4.5	4.5
	D_b	165.1	165.1
Weight, Kg		160.0	175.0
IS		410 SP-43	410 SP-52

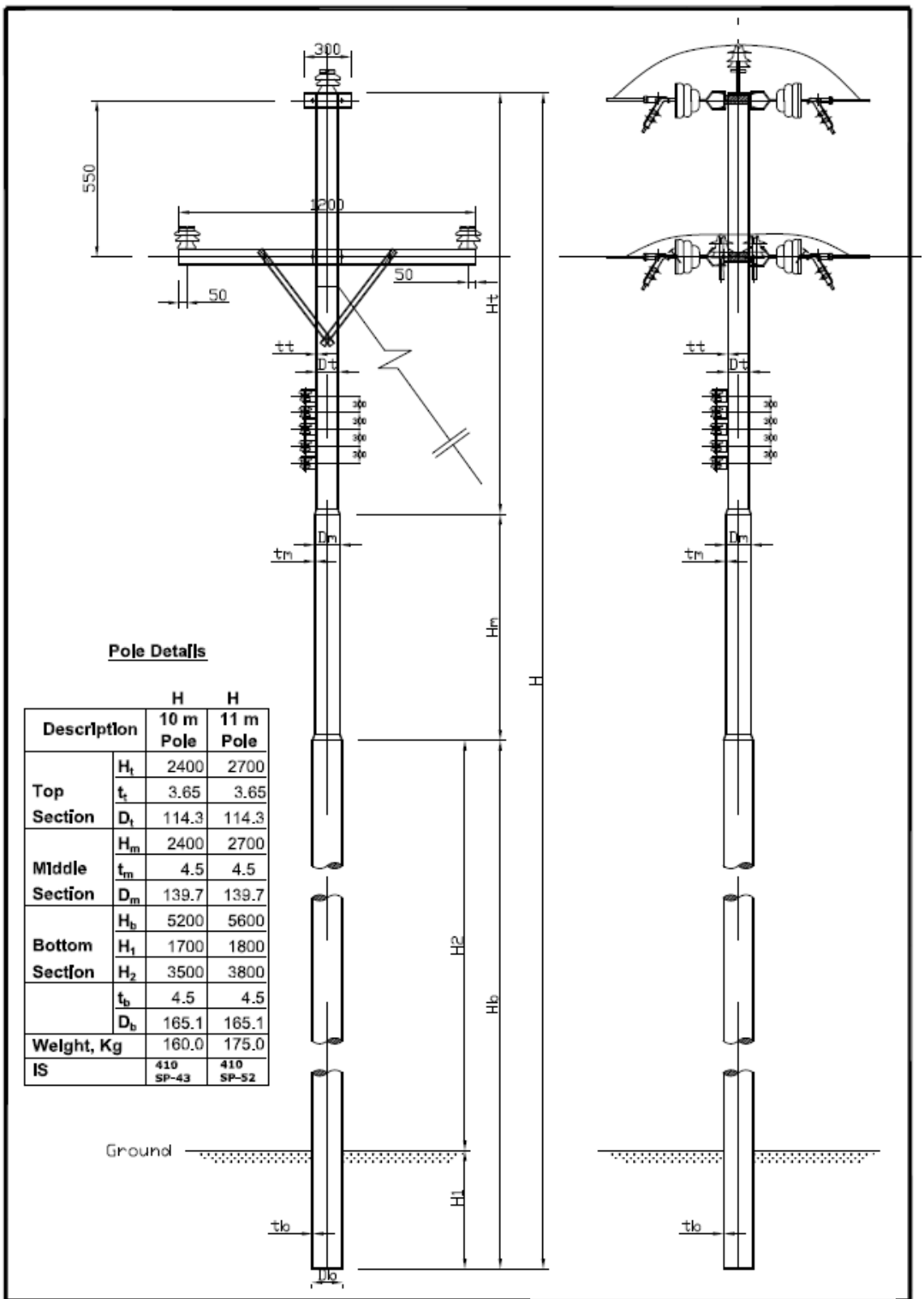
Drawing	11kV, 10/11 m Steel Tubular Pole	*Nepal Electricity Authority*
CS11-STP-01	No Deviation (0 – 7 deg)	*Butwal Regional Office*



Pole Details

Description		H 10 m Pole	H 11 m Pole
Top Section	H_t	2400	2700
	t_t	3.65	3.65
	D_t	114.3	114.3
Middle Section	H_m	2400	2700
	t_m	4.5	4.5
	D_m	139.7	139.7
Bottom Section	H_b	5200	5600
	H_1	1700	1800
	H_2	3500	3800
	t_b	4.5	4.5
	D_b	165.1	165.1
Weight, Kg		160.0	175.0
IS		410 SP-43	410 SP-52

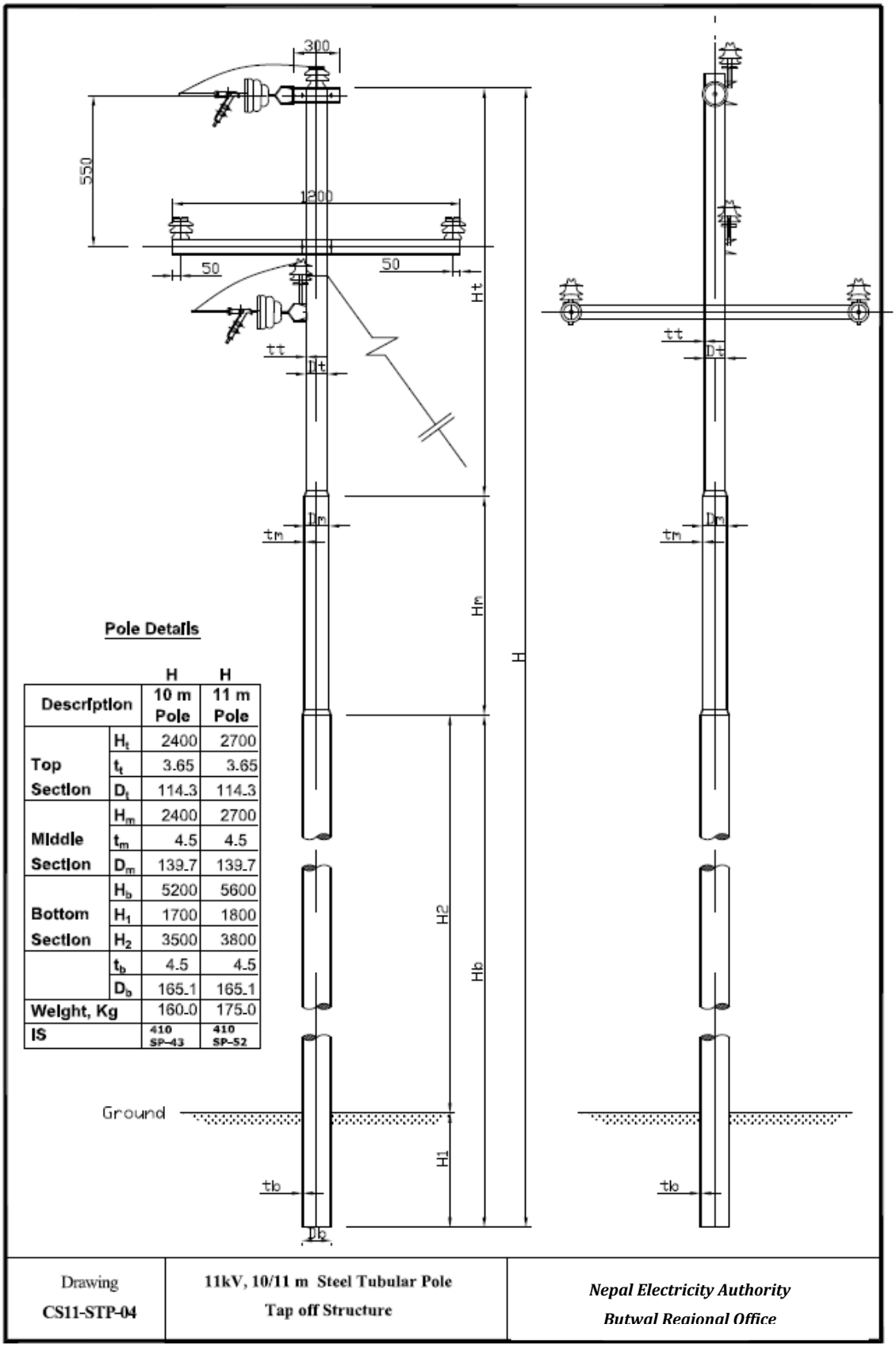
Drawing	11kV, 10/11 m Steel Tubular Pole	*Nepal Electricity Authority*
CS11-STP-02	Low Angle (8 - 15 deg)	*Butwal Regional Office*



Pole Details

Description		H 10 m Pole	H 11 m Pole
Top Section	H_t	2400	2700
	t_t	3.65	3.65
	D_t	114.3	114.3
Middle Section	H_m	2400	2700
	t_m	4.5	4.5
	D_m	139.7	139.7
Bottom Section	H_b	5200	5600
	H_1	1700	1800
	H_2	3500	3800
	t_b	4.5	4.5
	D_b	165.1	165.1
Weight, Kg		160.0	175.0
IS		410 SP-43	410 SP-52

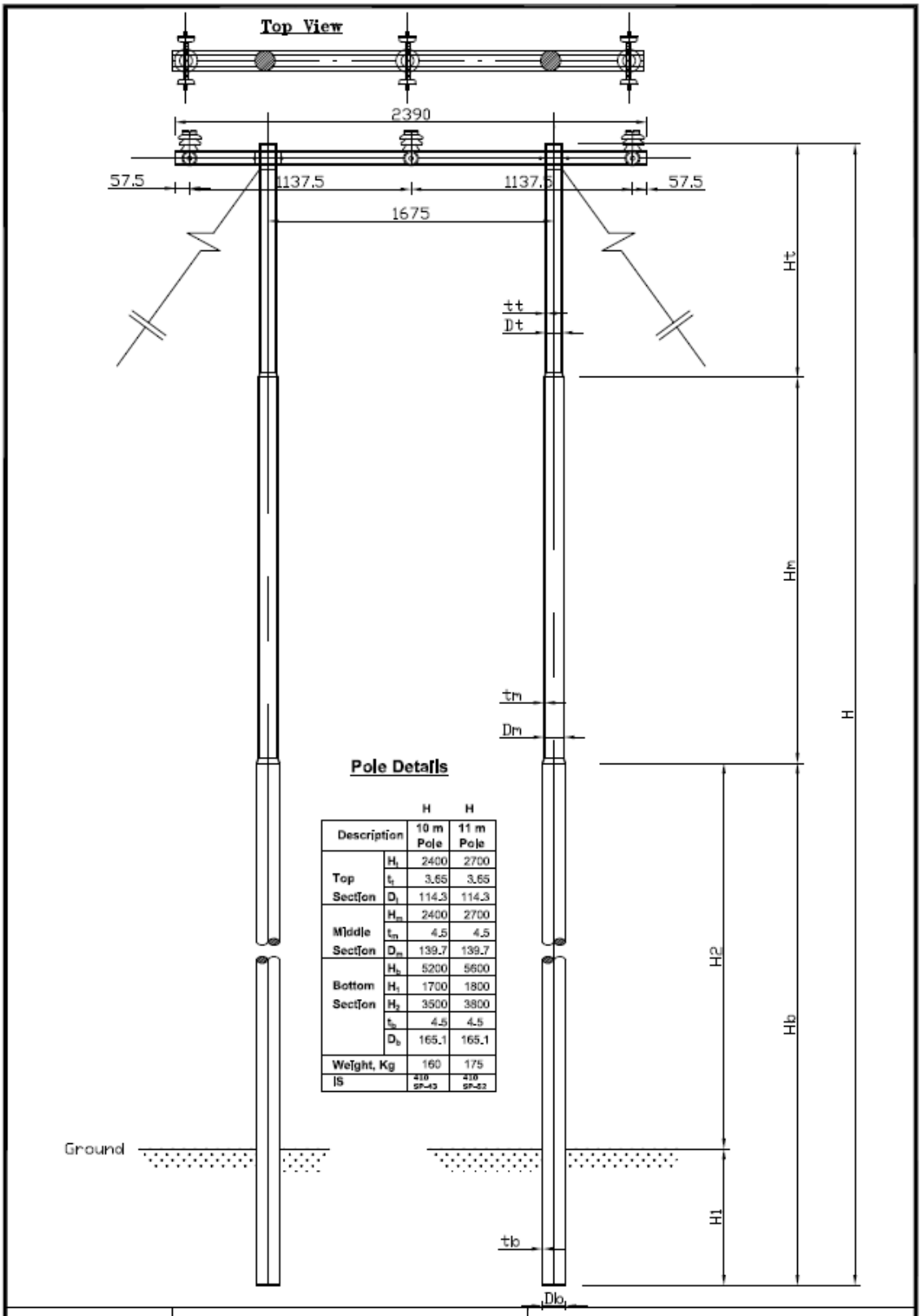
Drawing	11kV, 10/11 m Steel Tubular Pole	*Nepal Electricity Authority*
CS11-STP-03	Dead End Type	*Butwal Regional Office*



Pole Details

Description		H 10 m Pole	H 11 m Pole
Top Section	H_t	2400	2700
	t_t	3.65	3.65
	D_t	114.3	114.3
Middle Section	H_m	2400	2700
	t_m	4.5	4.5
	D_m	139.7	139.7
Bottom Section	H_b	5200	5600
	H_1	1700	1800
	H_2	3500	3800
	t_b	4.5	4.5
	D_b	165.1	165.1
Weight, Kg		160.0	175.0
IS		410 SP-43	410 SP-52

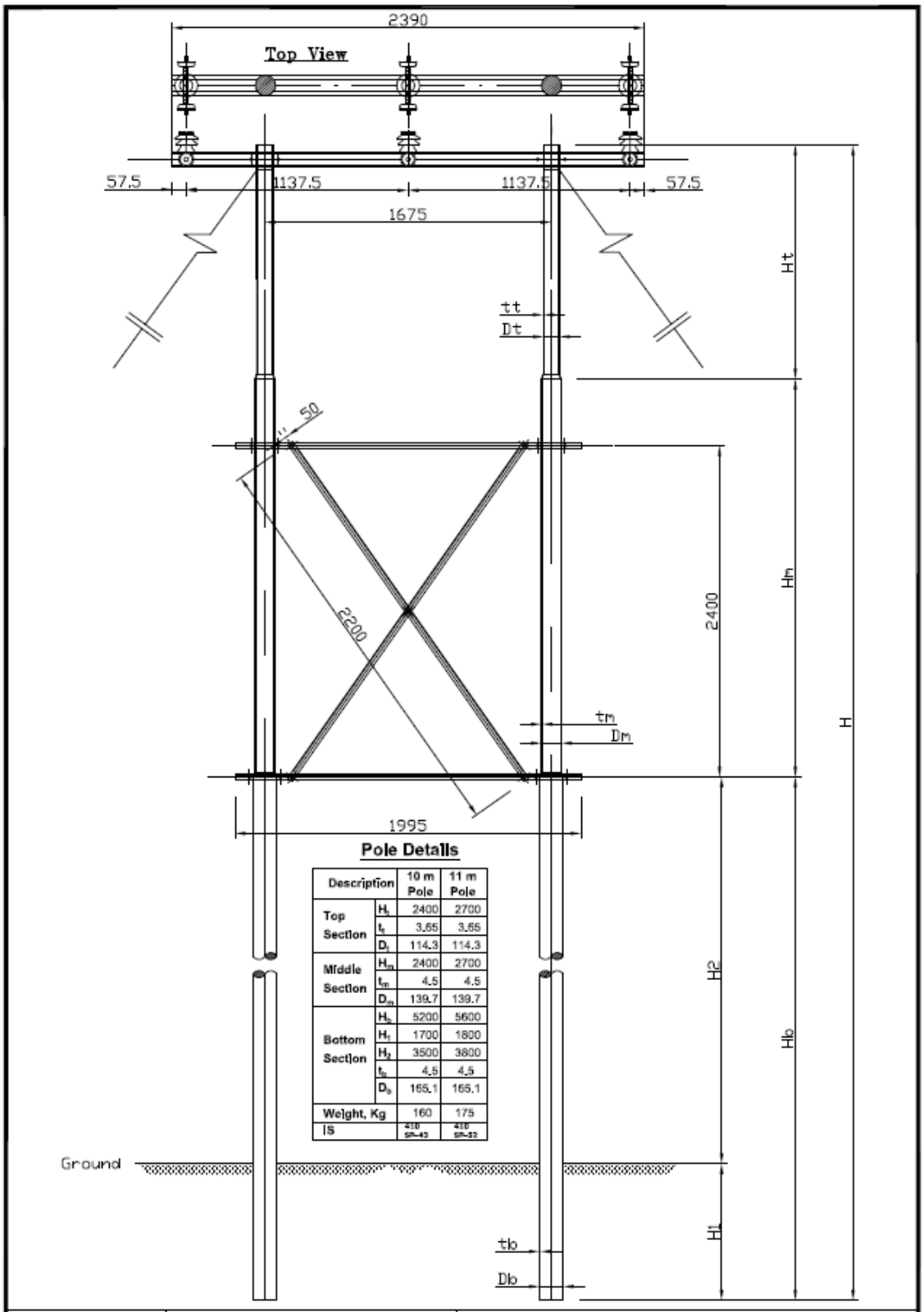
Drawing	11kV, 10/11 m Steel Tubular Pole	*Nepal Electricity Authority*
CS11-STP-04	Tap off Structure	*Butwal Regional Office*



Pole Details

Description		H 10 m Pole	H 11 m Pole
Top Section	H_t	2400	2700
	t_t	3.65	3.65
	D_t	114.3	114.3
Middle Section	H_m	2400	2700
	t_m	4.5	4.5
	D_m	139.7	139.7
Bottom Section	H_b	5200	5600
	H_1	1700	1800
	H_2	3500	3800
	t_b	4.5	4.5
	D_b	165.1	165.1
Weight, Kg		160	175
IS		410 SP-43	410 SP-82

Drawing	11kV, 10/11 m Steel Tubular Pole	Nepal Electricity Authority
CS11-STP-05	Medium Angle (16 – 30 deg)	Butwal Regional Office

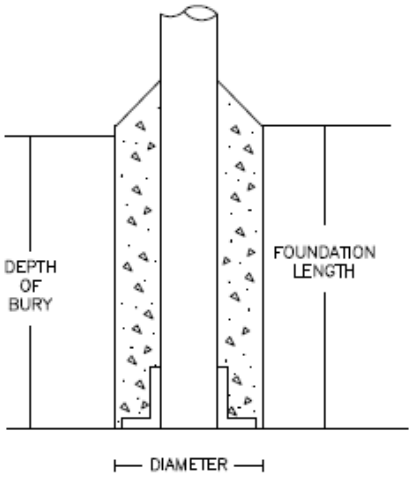


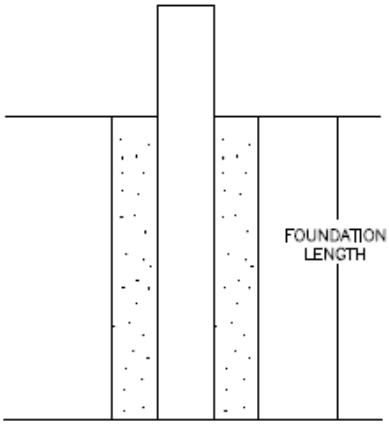
Description		10 m Pole	11 m Pole
Top Section	H_t	2400	2700
	t_t	3.65	3.65
	D_t	114.3	114.3
Middle Section	H_m	2400	2700
	t_m	4.5	4.5
	D_m	139.7	139.7
Bottom Section	H_b	5200	5600
	H_1	1700	1800
	H_2	3500	3800
	t_b	4.5	4.5
	D_b	165.1	165.1
Weight, Kg		160	175
IS		410 SP-43	410 SP-32

Drawing	11kV, 10/11 m Steel Tubular Pole	Nepal Electricity Authority
CS11-STP-06	High Angle (Above 30 deg)	Butwal Regional Office

PLOE LENGTH (m.)	DEPTH OF BURIAL (m.)	FOUNDATION LENGTH (m.)	SOIL CLASS – Kg./Sq. mm.						
			0.5	0.75	1.0	2.0	3.0	4.0	5.0
			FOUNDATION DIAMETER – mm.						
9	1.5	1.6	1050	860	750	530	430	N/R	N/R
11	1.8	1.9	1080	880	760	540	440	N/R	N/R

N/R = NOT REQUIRED





FUNDATION FOR STEEL TUBULAR
AND CONCRETE POLES

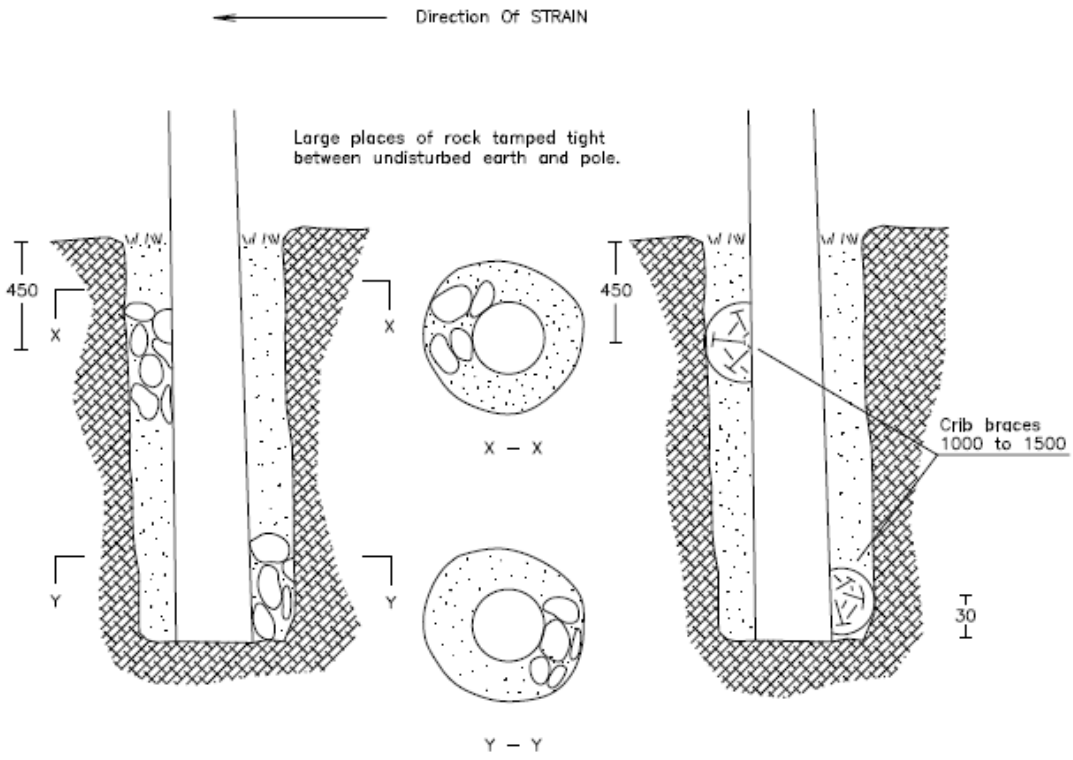
FOUNDATION

CONCRETE TO BE USED FOR FOUNDATIONS:
1 PART CEMENT
2 PART SAND
3 PART AGGREGATE
— BY VOLUME

WATER – CEMENT RATIO:
32 LITERS – 50Kg. APPROX.

Note: In case of non–galvanized steel pole the foundation above ground level shall be 0.4 m more than that is shown in the drawing.

Drawing CSG-POLE-01	Pole Setting	Nepal Electricity Authority Butwal Regional Office

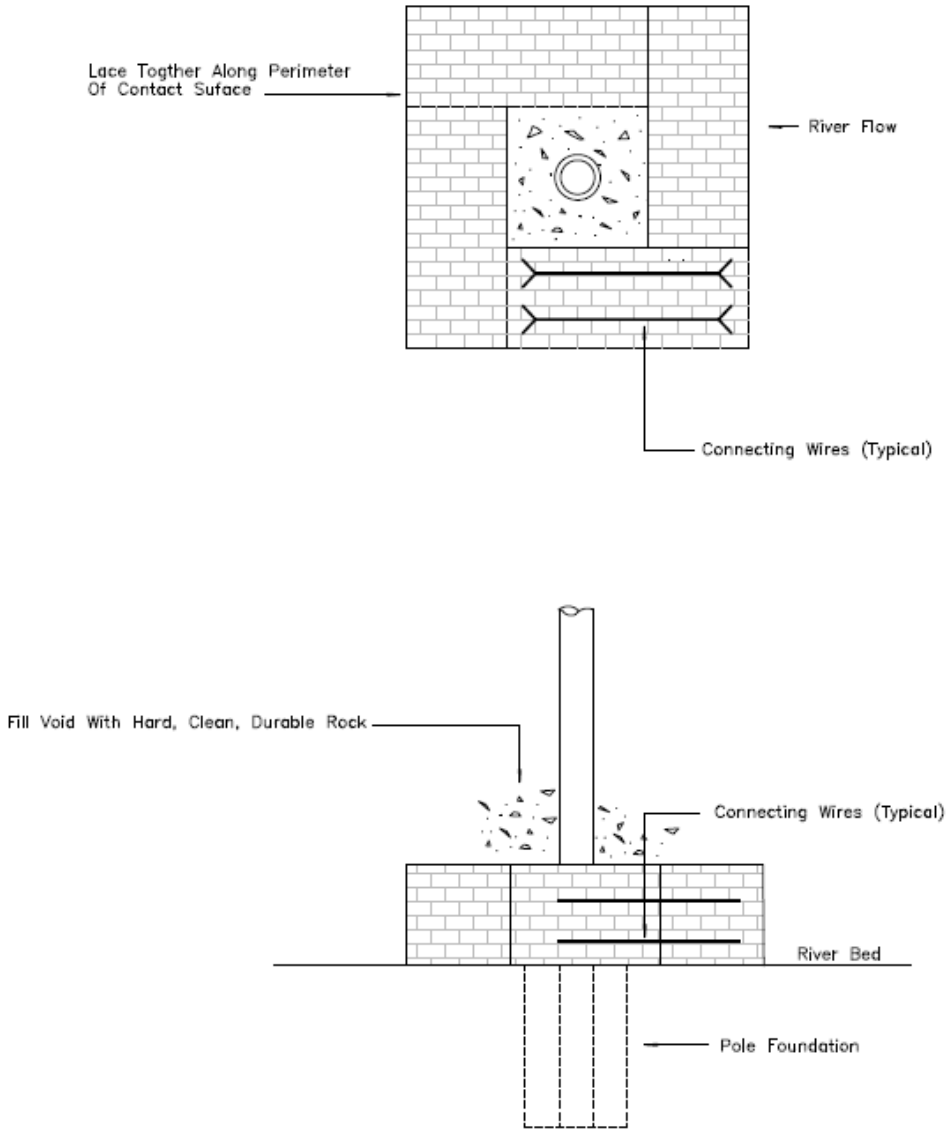


For use where ground is soild or compact.

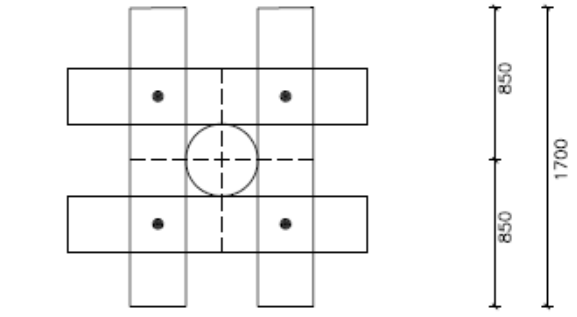
For use where ground is soft

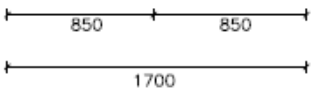
NOTE:
CRIBBING FOR POLES WITHOUT CONCRETE FUNDATIONS.

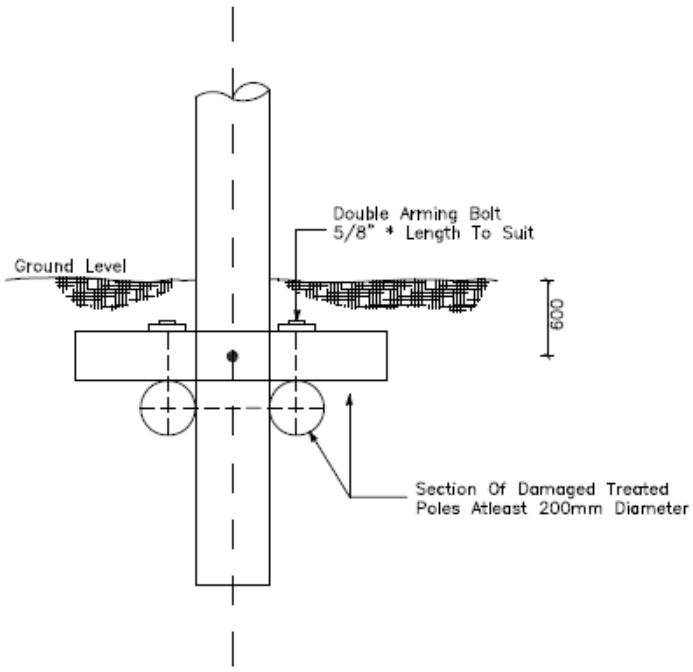
Drawing CSG-POLE-02	Pole Burial	*Nepal Electricity Authority* *Butwal Regional Office*



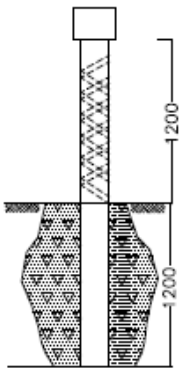
Drawing CSG-POLE-03	**Pole Protection in Shallow River Beds**	***Nepal Electricity Authority*** ***Butwal Regional Office***

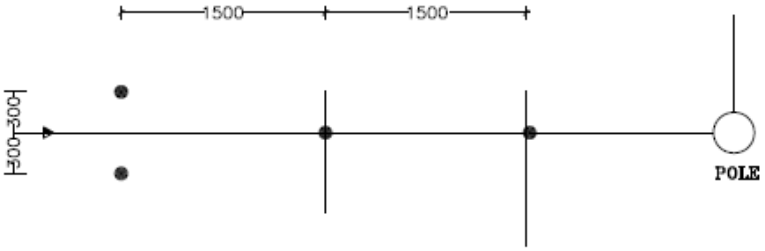


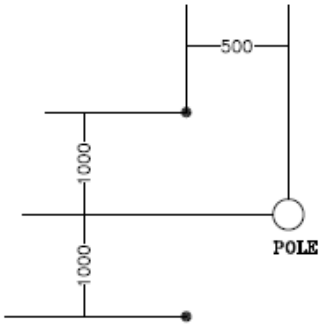


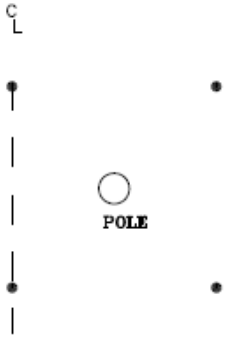


Drawing **CSG-POLE-05**	**Pole Bog Shoe**	***Nepal Electricity Authority*** ***Butwal Regional Office***



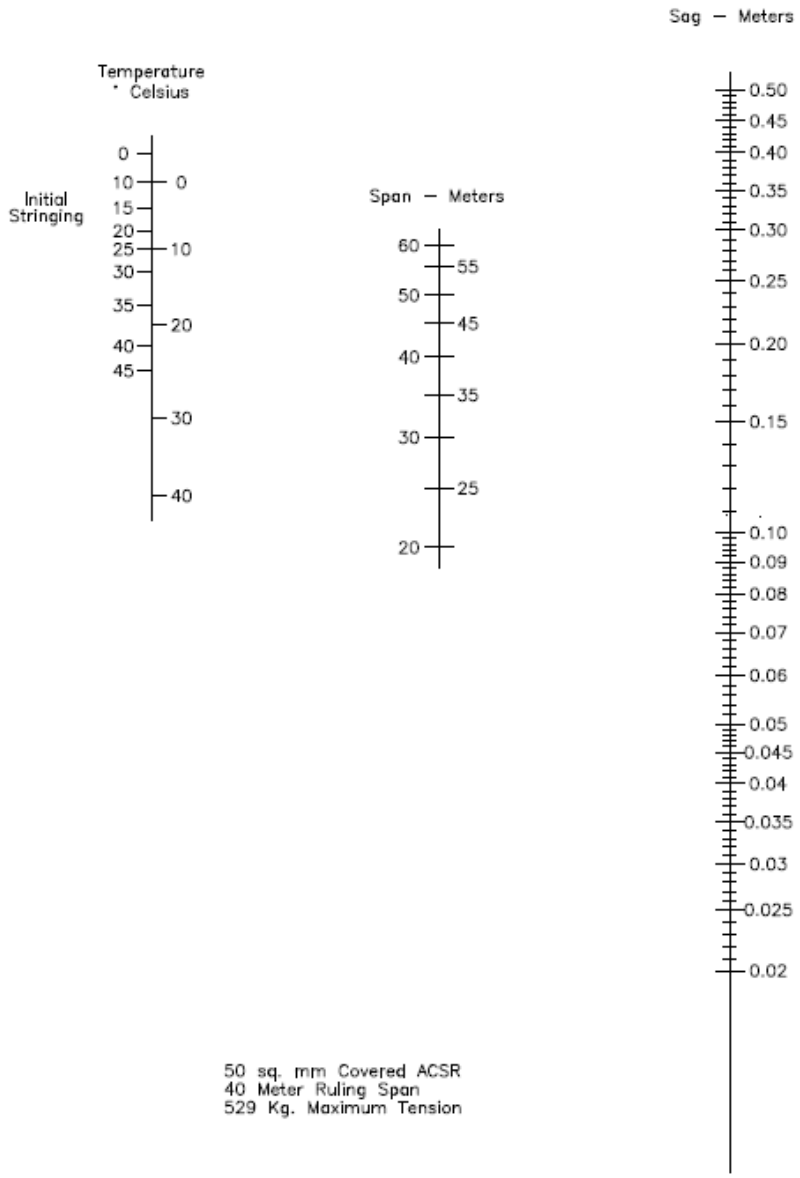




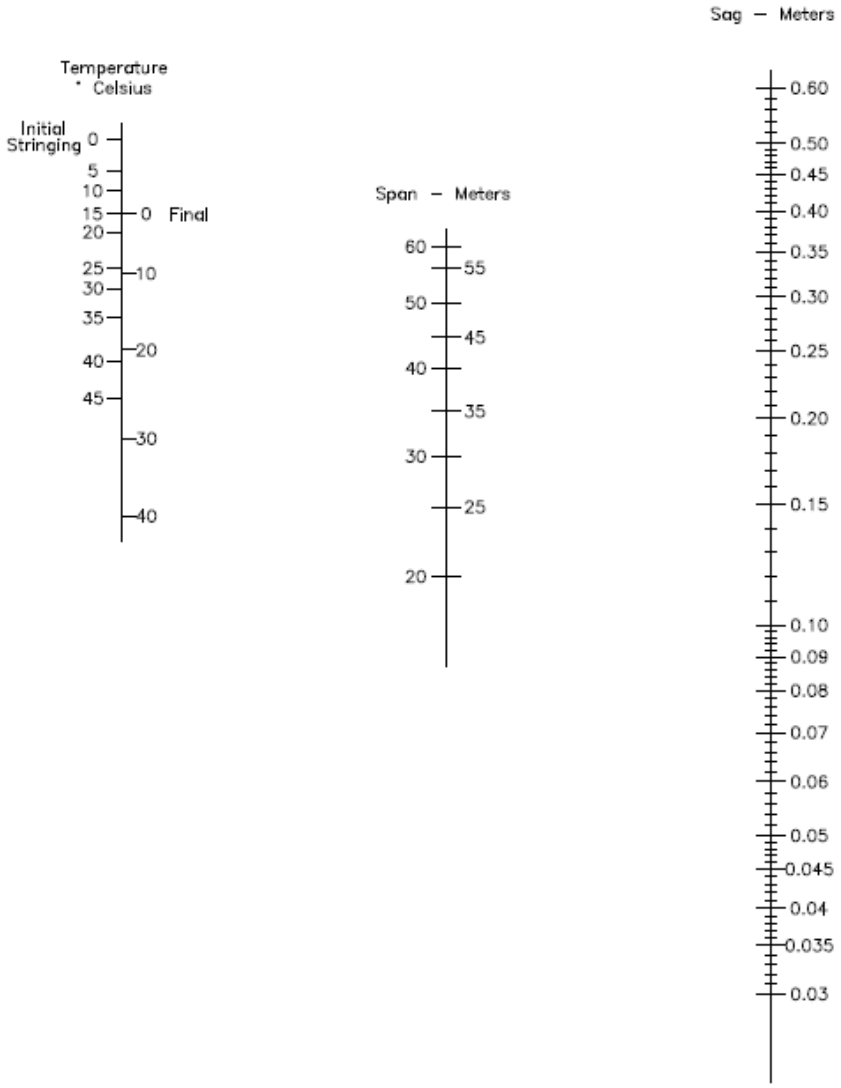


Transformer Structure

Drawing **CSG-POLE-06**	**Protective Barrier**	***Nepal Electricity Authority*** ***Butwal Regional Office***

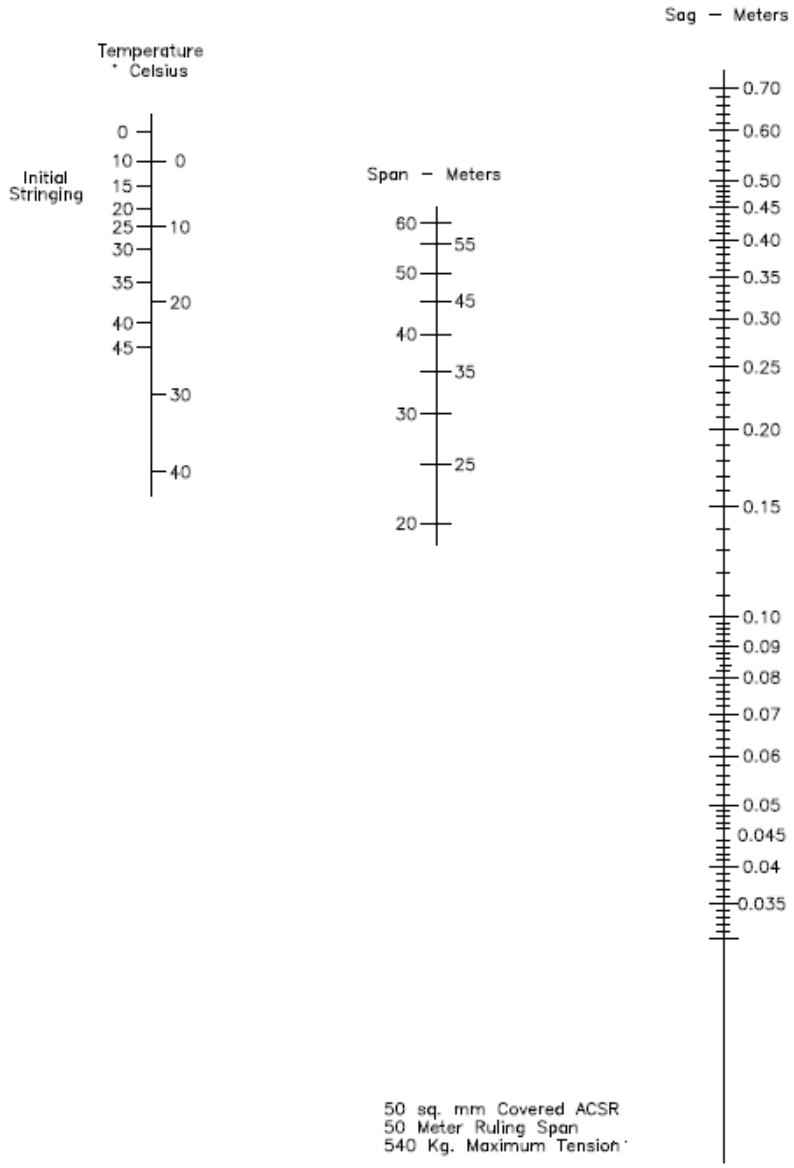


Drawing **CSG-SAG-06**	**Sag Chart** **50 sq. mm ACSR**	***Nepal Electricity Authority*** ***Butwal Regional Office***

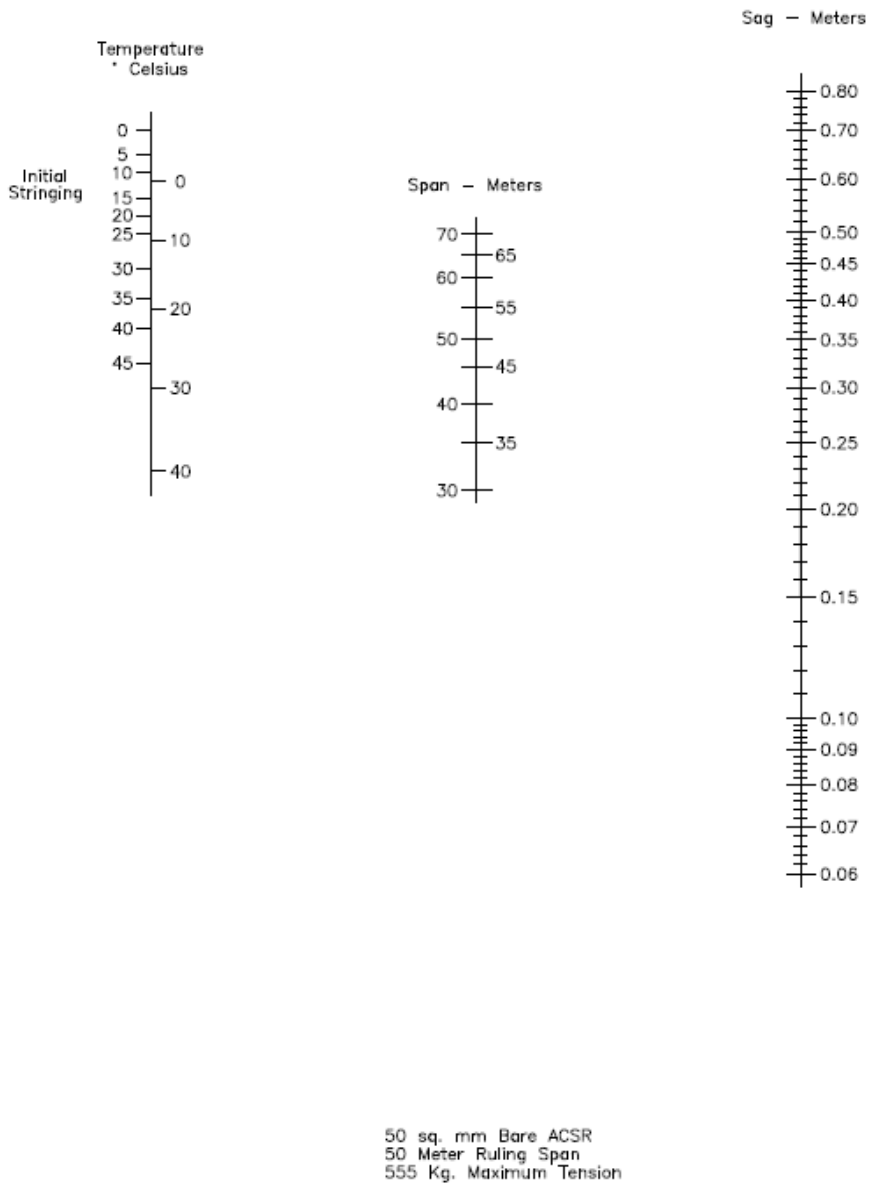


50 sq. mm Bare ACSR
40 Meter Ruling Span
540 Kg. Maximum Tension

Drawing	Sag Chart	Nepal Electricity Authority
CSG-SAG-07	50 sq. mm ACSR	Butwal Regional Office

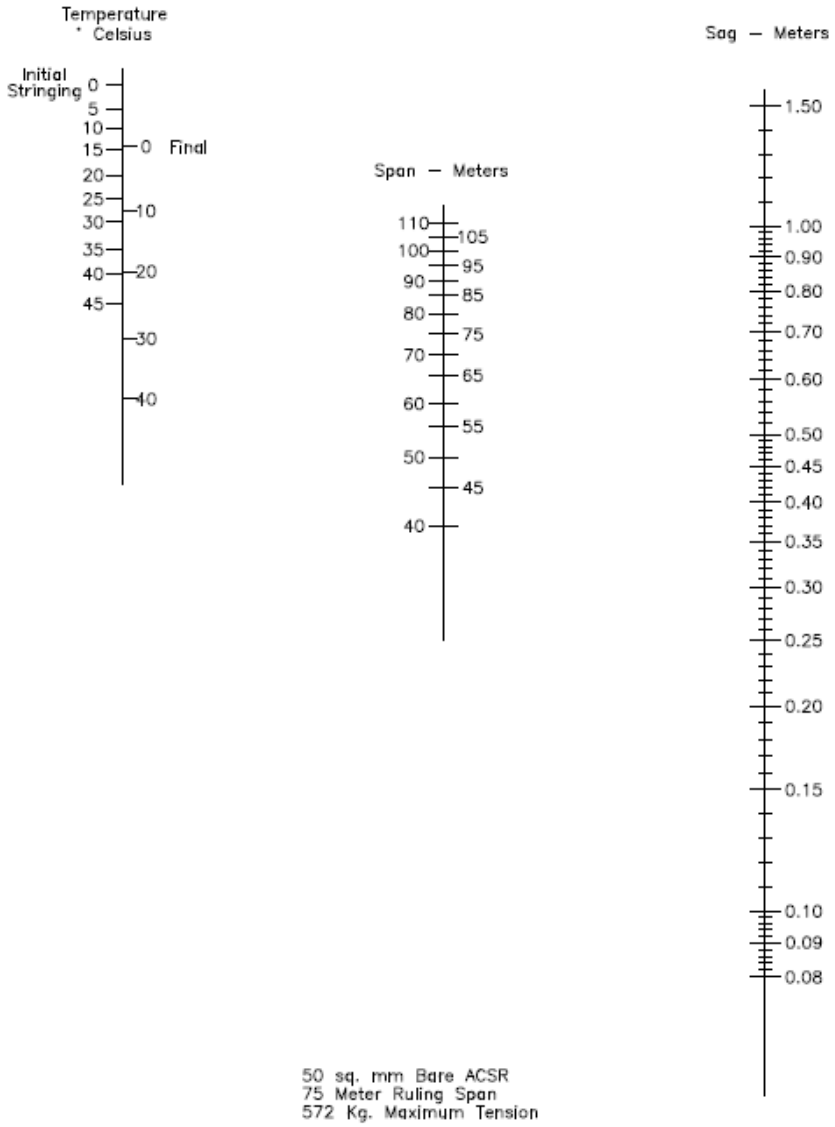


Drawing	Sag Chart	Nepal Electricity Authority
CSG-SAG-08	50 sq. mm ACSR	Butwal Regional Office

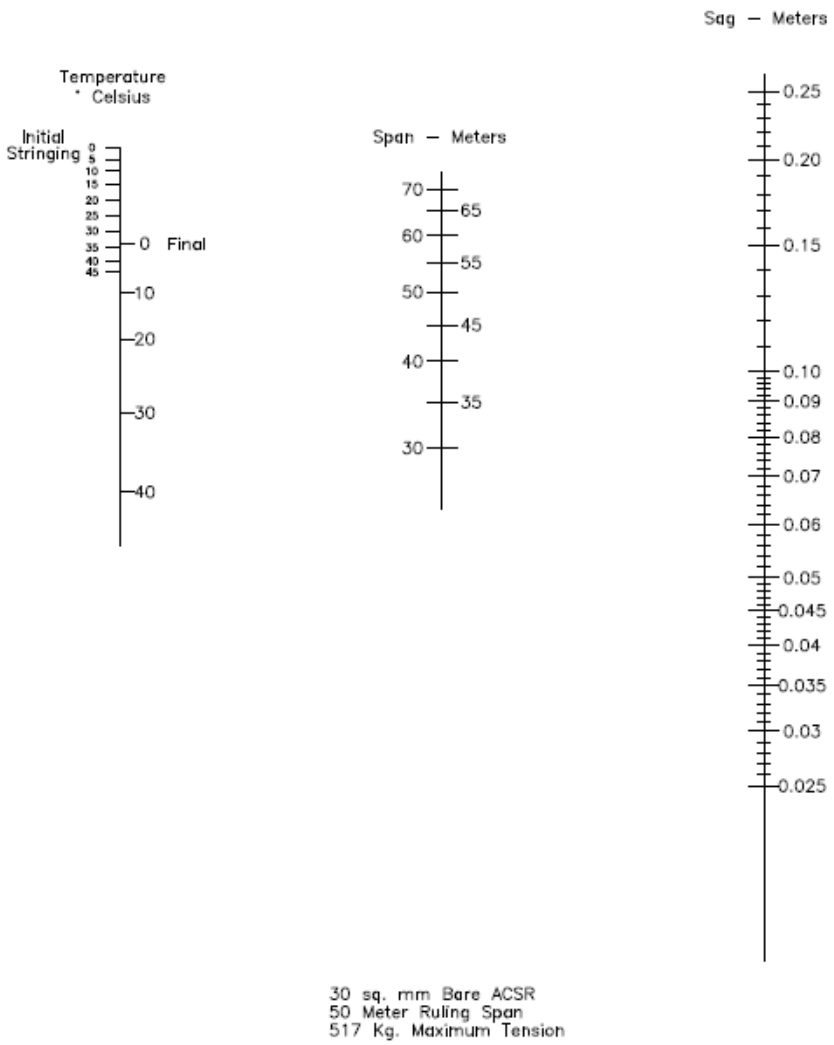


50 sq. mm Bare ACSR
50 Meter Ruling Span
555 Kg. Maximum Tension

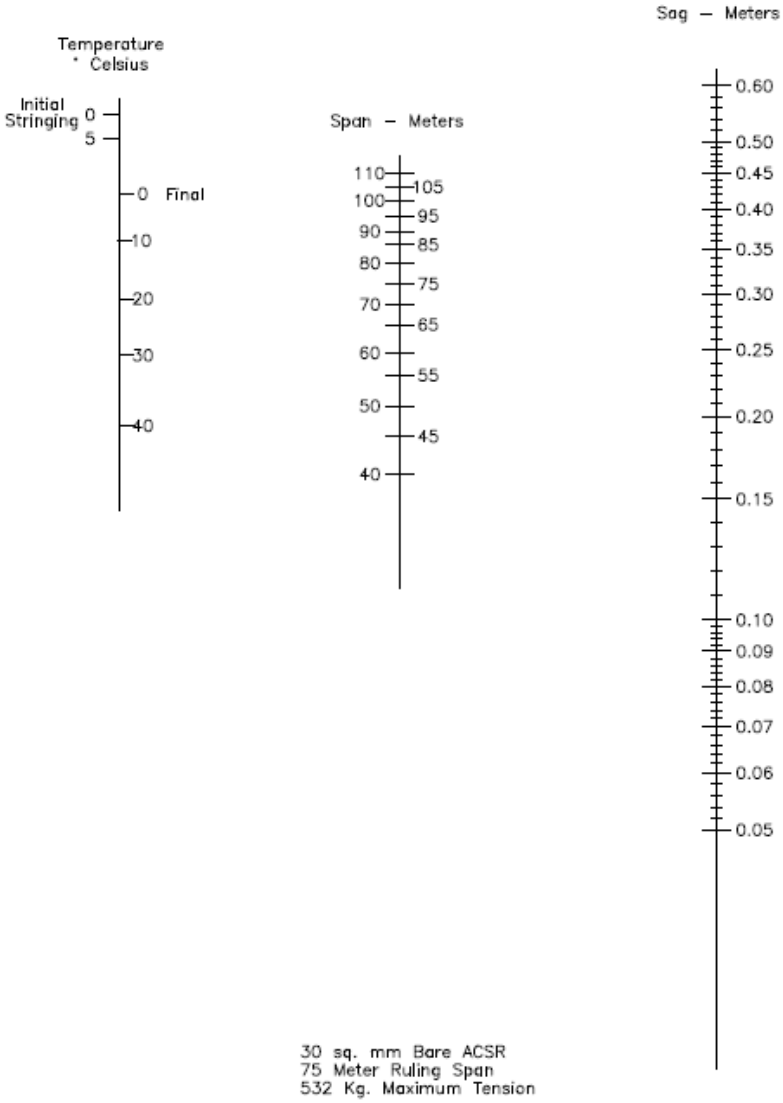
Drawing	Sag Chart	Nepal Electricity Authority
CSG-SAG-09	50 sq. mm ACSR	Butwal Regional Office



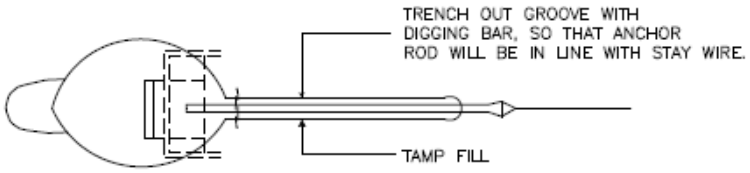
Drawing **CSG-SAG-10**	**Sag Chart** **50 sq. mm ACSR**	***Nepal Electricity Authority*** ***Butwal Regional Office***

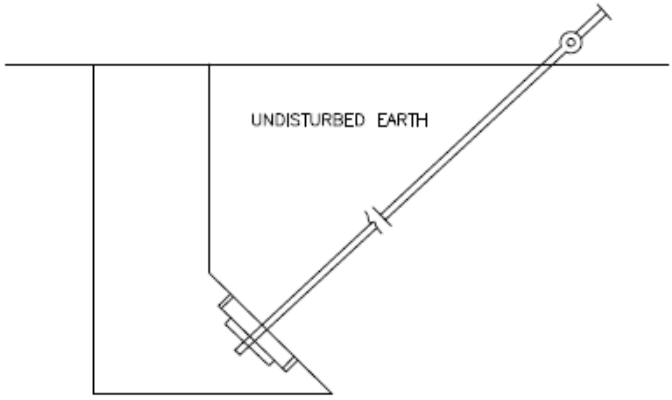


Drawing	Sag Chart	Nepal Electricity Authority
CSG-SAG-11	30 sq. mm ACSR	Butwal Regional Office



Drawing **CSG-SAG-12**	**Sag Chart** **30 sq. mm ACSR**	***Nepal Electricity Authority*** ***Butwal Regional Office***

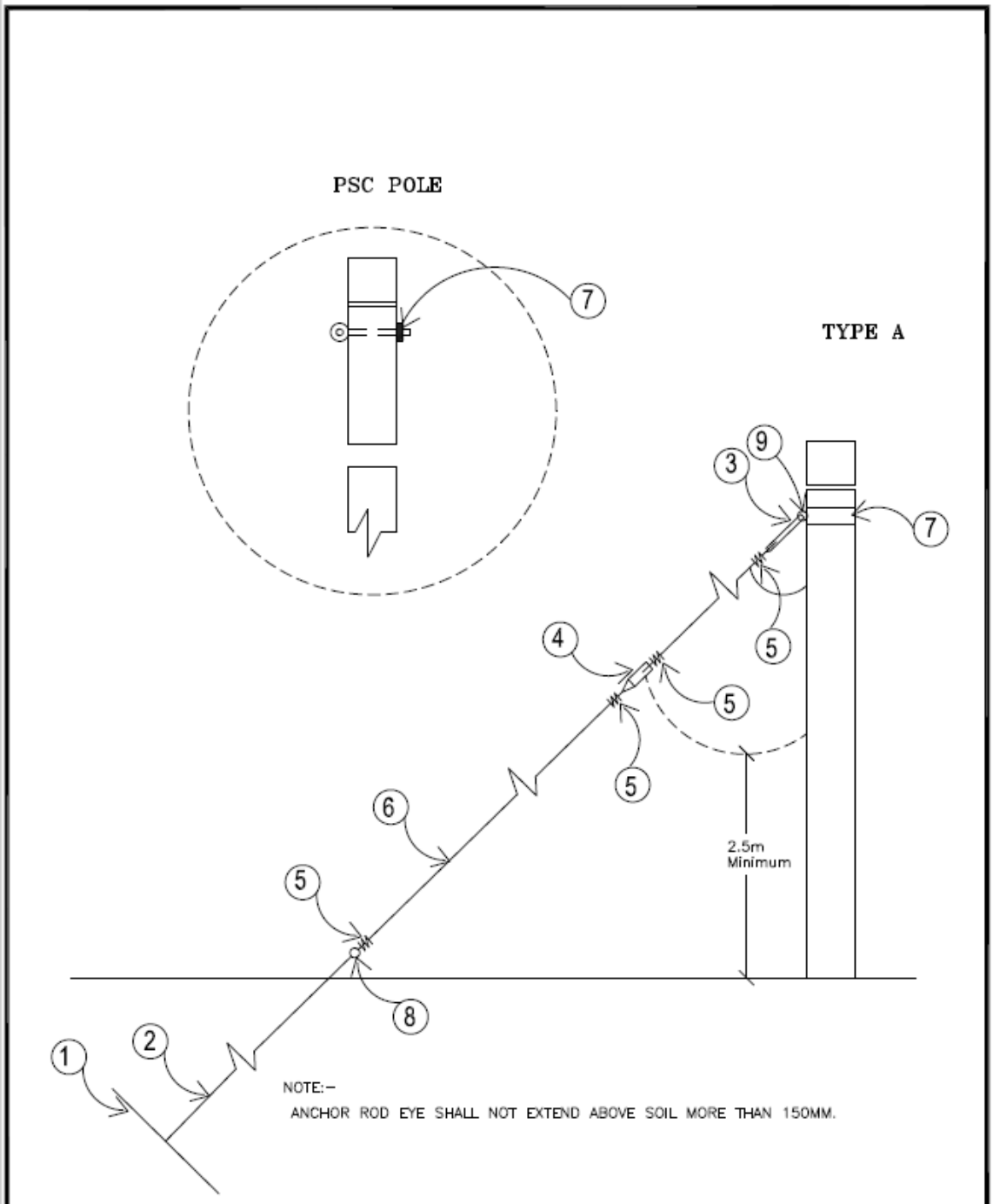




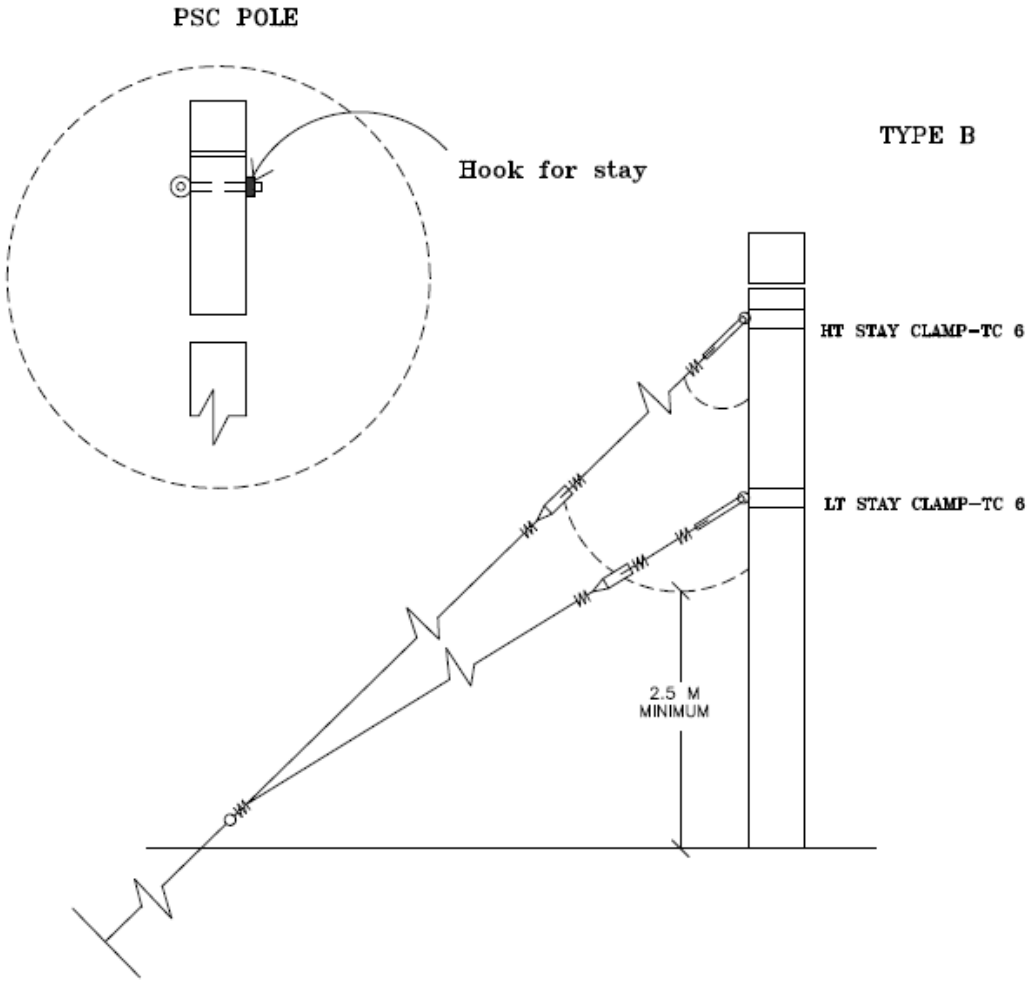
MAKE UNDERCUT AT BOTTOM OF ANCHOR HOLE,
PLATE TO BEAR AGAINST UNDISTURBED EARTH.

1. BACKFILL SHALL BE THOROUGHLY TAMPED.
2. BACKFILL FOR ANCHORS PLACED IN SOFT OR UNSTABLE SOIL SHALL BE 50MM GRAVEL PLACED TO DEPTH OF 1000 MM ABOVE ANCHOR PLATE.

Drawing **CSG-STAY-01**	**Stays and Anchors**	***Nepal Electricity Authority*** ***Butwal Regional Office***

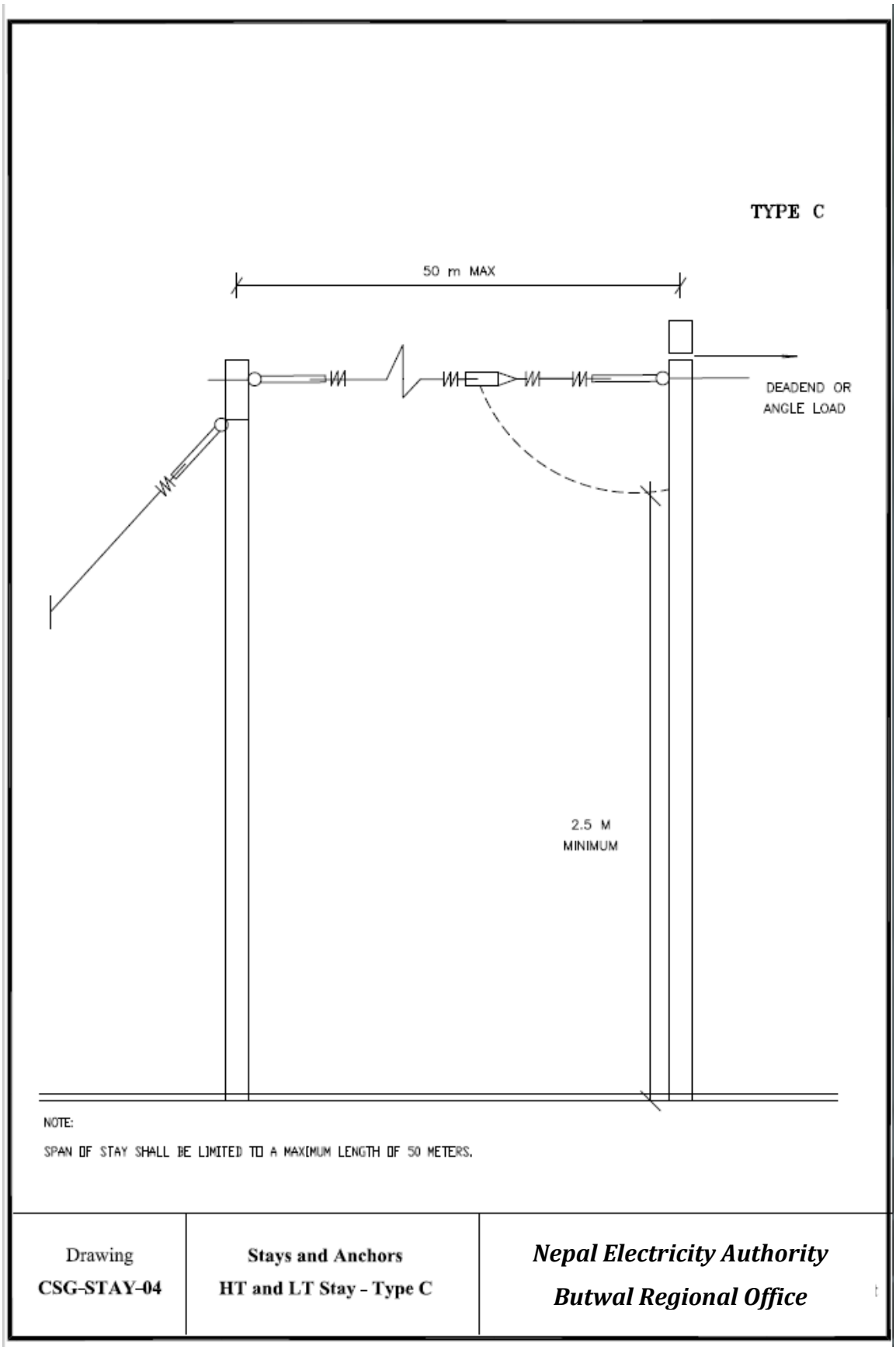


Drawing	Stays and Anchors	Nepal Electricity Authority
CSG-STAY-02	HT and LT Stay - Type A	Butwal Regional Office



NOTE:
STAY ROD EYE SHALL NOT EXTEND ABOVE SOIL MORE THAN 150mm.

Drawing	Stays and Anchors	*Nepal Electricity Authority*
CSG-STAY-03	**HT and LT Stay - Type B**	***Butwal Regional Office***



Drawing	Stays and Anchors	Nepal Electricity Authority
CSG-STAY-04	HT and LT Stay - Type C	Butwal Regional Office

NOTES

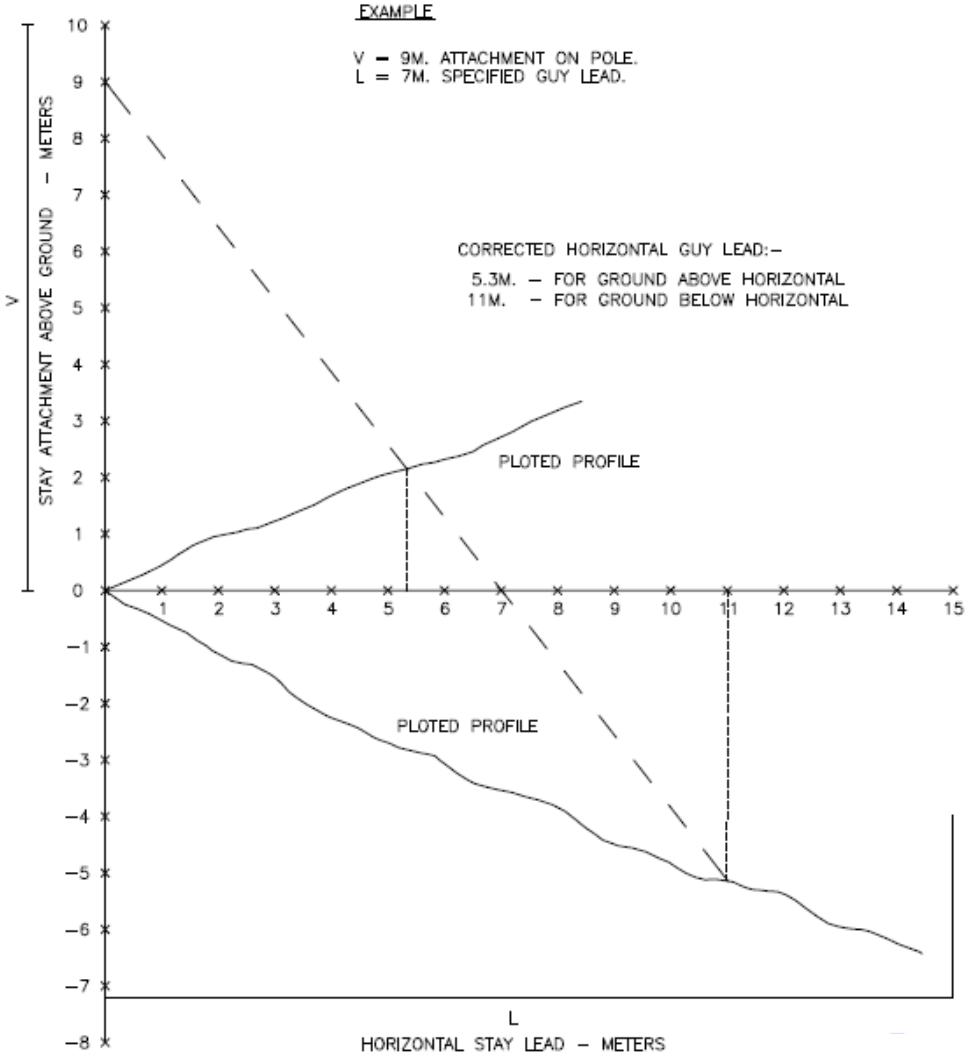
A. PLOT APPROXIMATE GROUND LINE PROFILE UNDER PROPOSED STAY.

B. SELECT A POINT ON VERTICAL SCALE "V" CORESPONDING TO GUY ATTACHMENT ON POLE , SELECT A POINT ON HORIZONTAL SCALE "L" CORESPONDING TO SPECIFIED STAY LEAD. LAY A STRAIGHT EDGE SO THAT IT PASSES THROUGH THESE TWO POINTS.

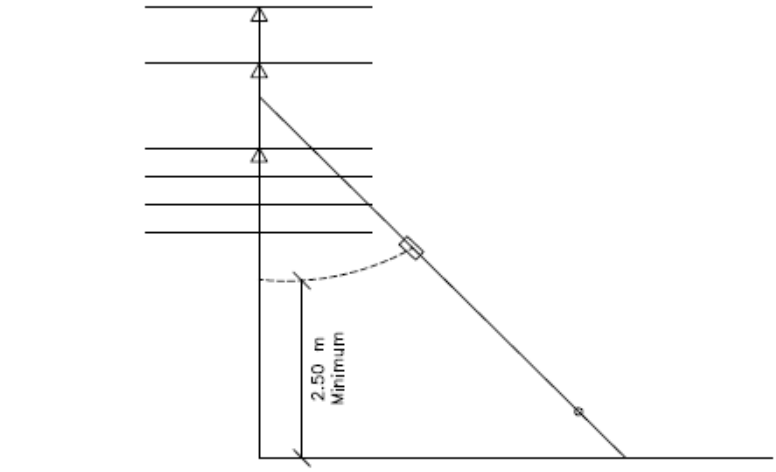
C. PROJECT POINT WHERE STRAIGHT EDGE INTERSECTS GROUND LINE PROFILE VERTICALLY TO HORIZONTAL SCALE "L" AND READ CORRECTED HORIZONTAL STAY LEAD.

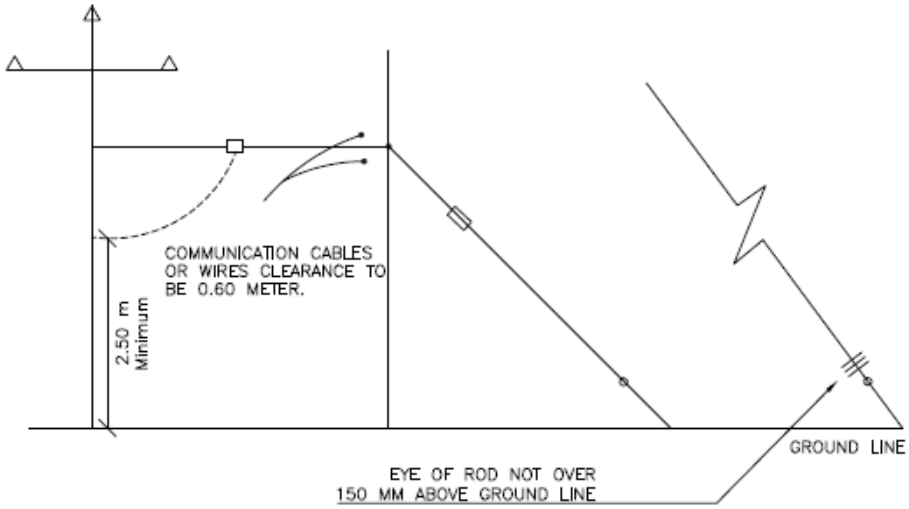
EXAMPLE

V = 9M. ATTACHMENT ON POLE.
L = 7M. SPECIFIED GUY LEAD.

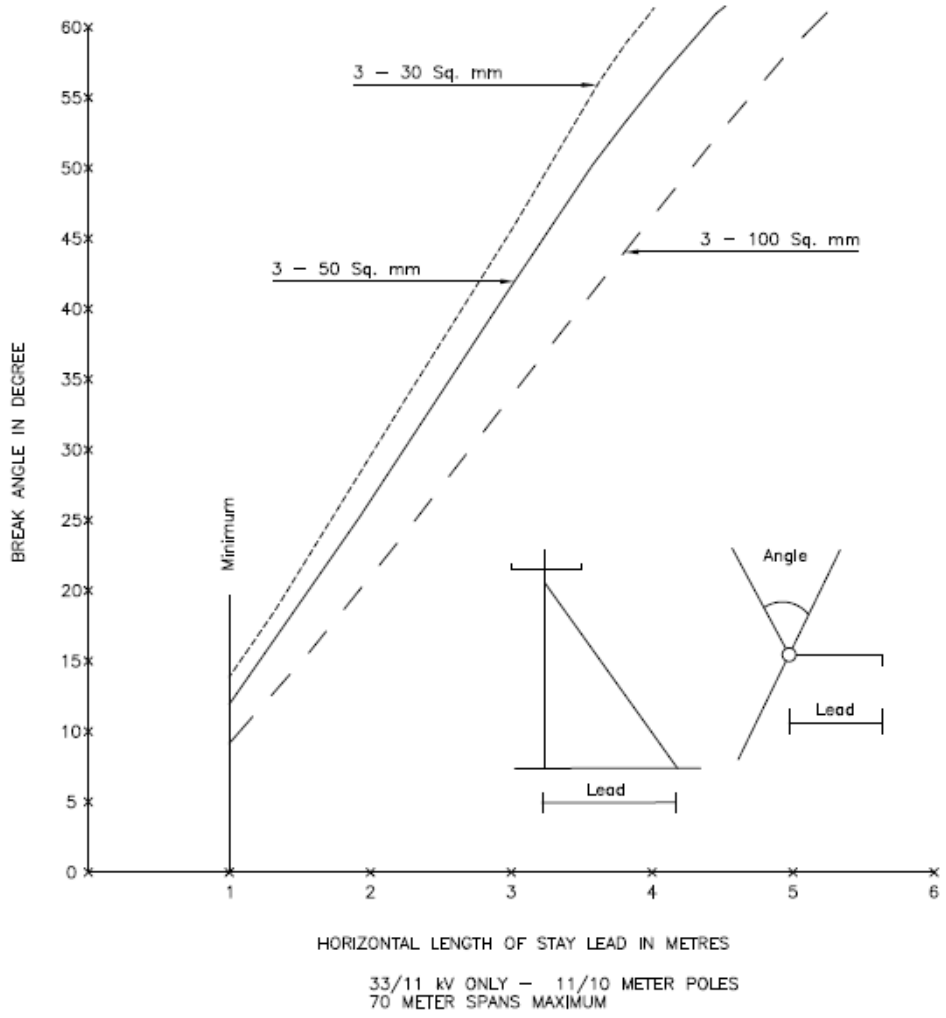


Drawing	Stays and Anchors	Nepal Electricity Authority
CSG-STAY-05	Stay Lead Correction Graph	Butwal Regional Office

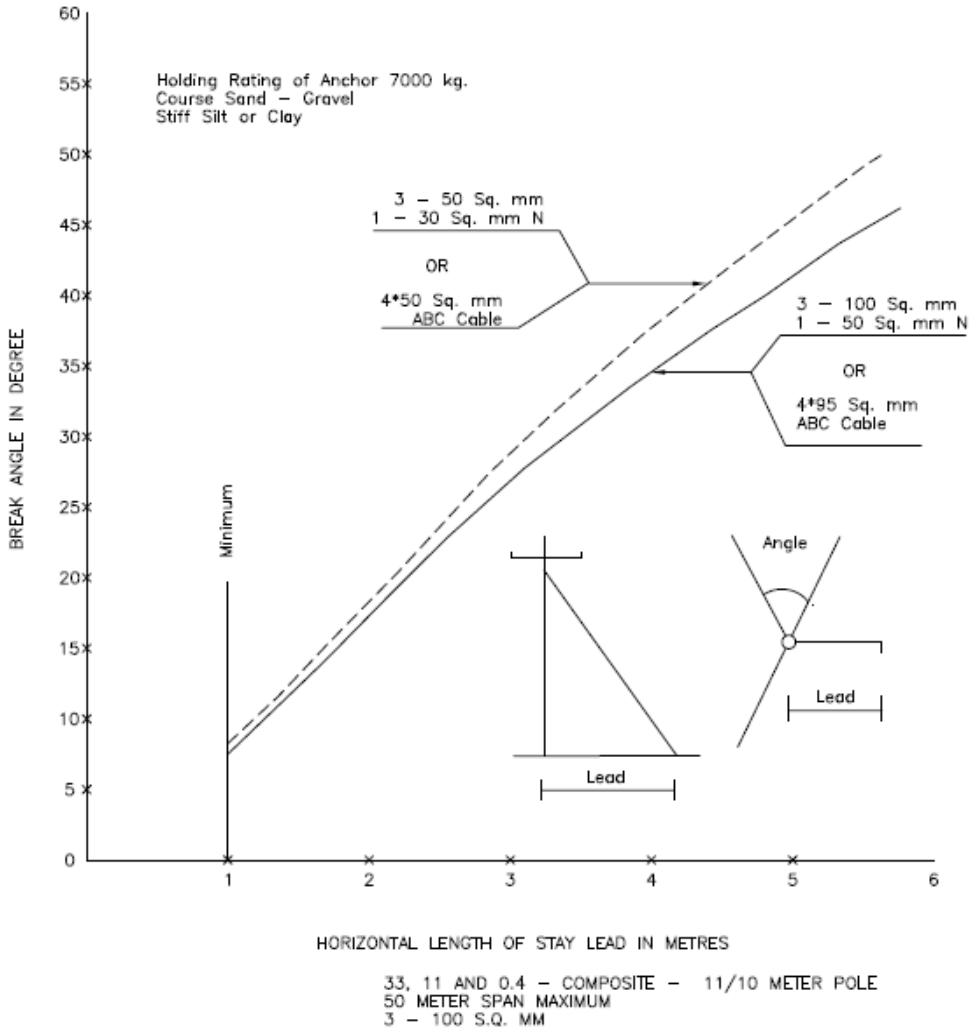




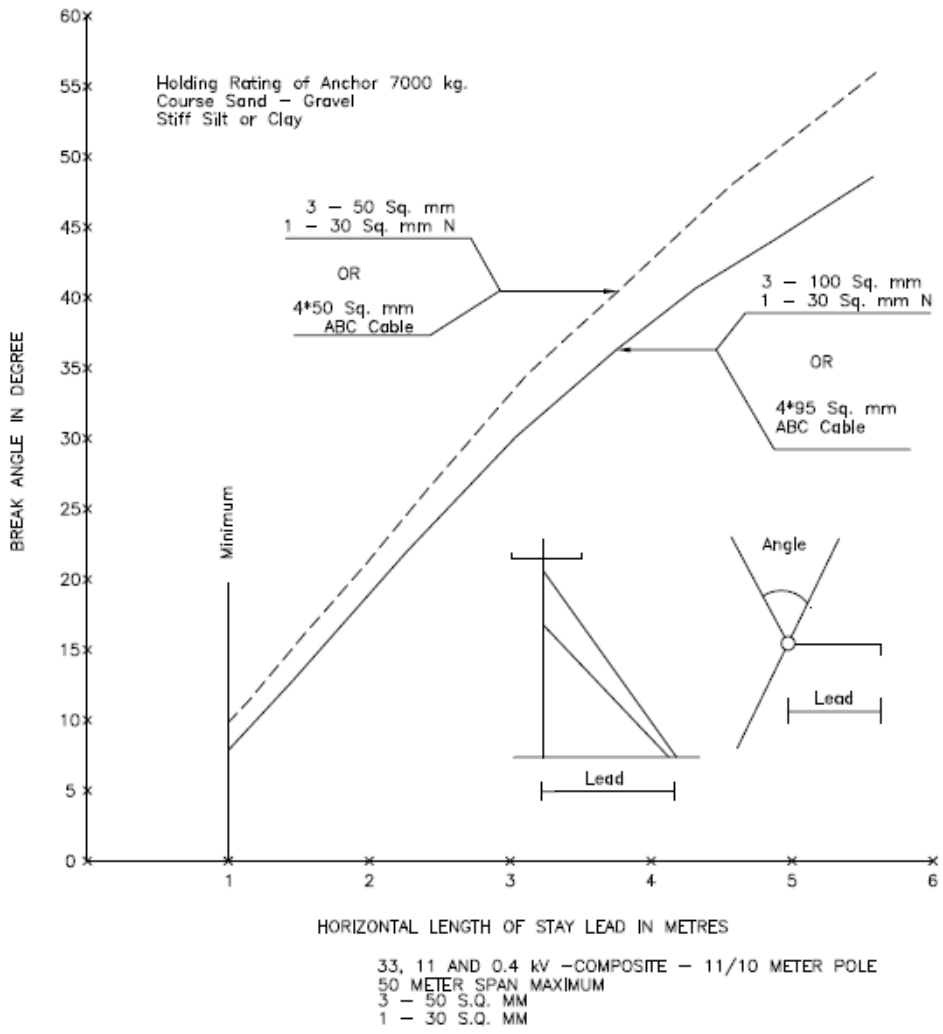
Drawing **CSG-STAY-06**	**Stays and Anchors**	***Nepal Electricity Authority*** ***Butwal Regional Office***



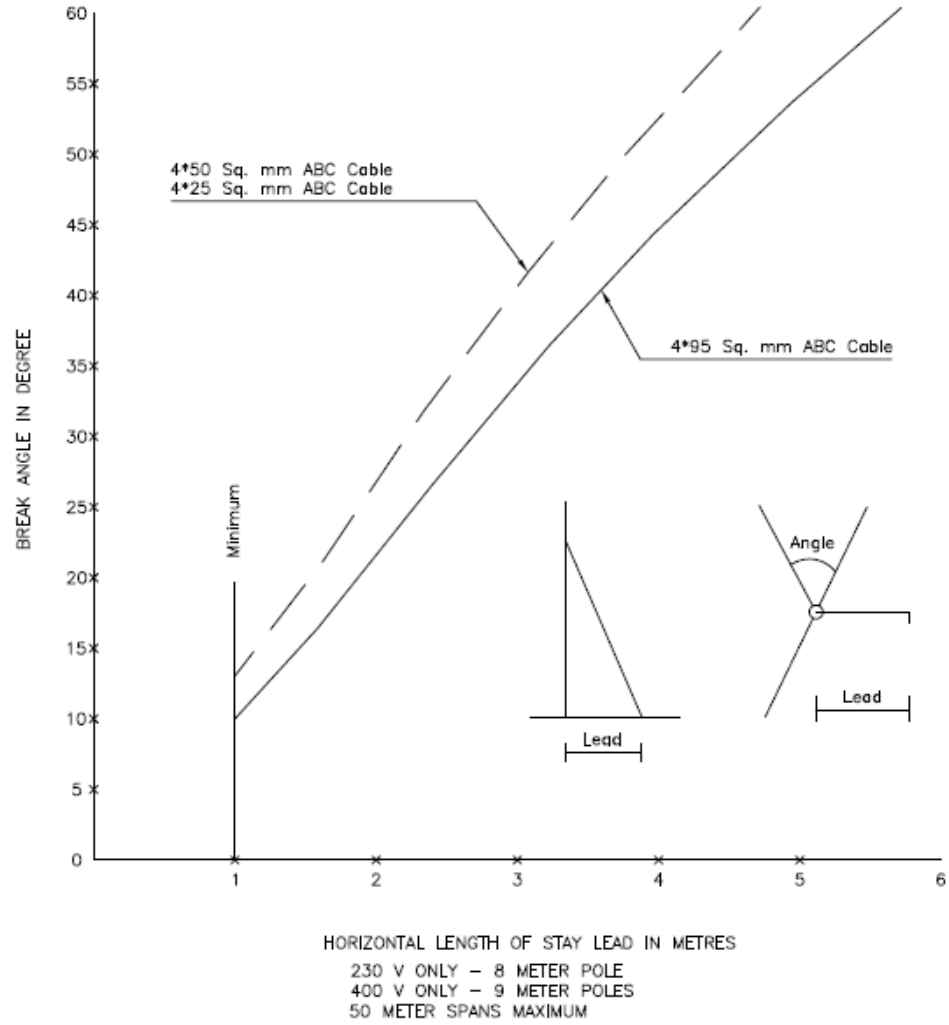
Drawing	Minimum Lead for Side Angle Stays	*Nepal Electricity Authority* *Butwal Regional Office*
CSG-STAY-07		



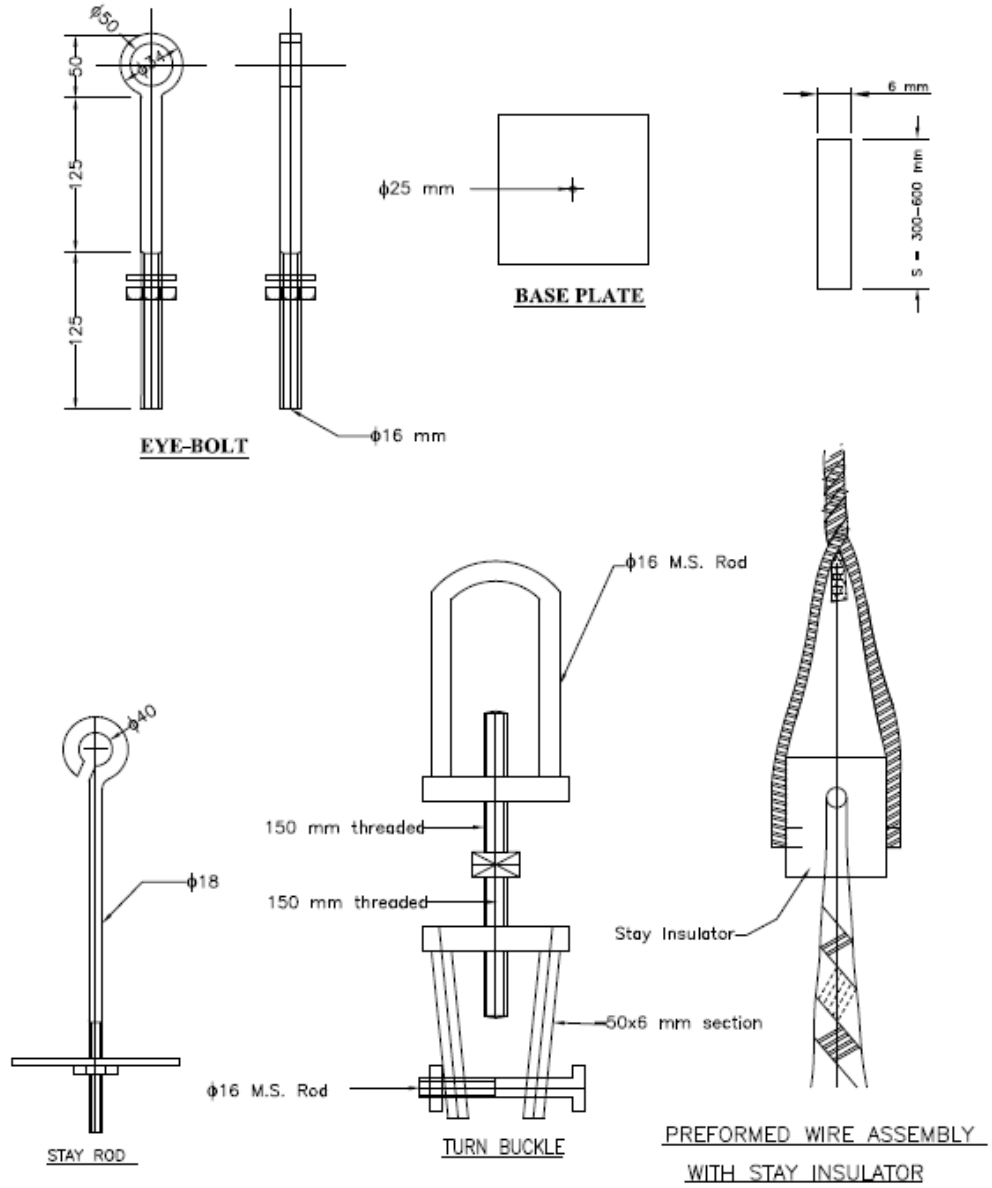
Drawing	Minimum Lead for Side	*Nepal Electricity Authority*
CSG-STAY-08	**Angle Stays**	***Butwal Regional Office***



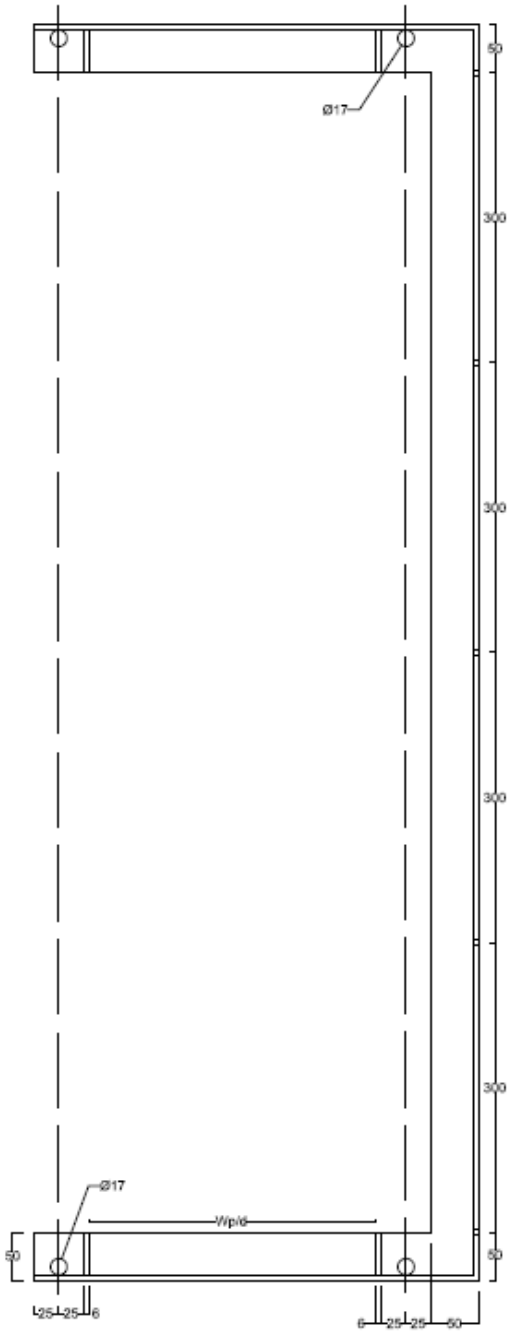
Drawing	Minimum Lead for Side	*Nepal Electricity Authority*
CSG-STAY-09	**Angle Stays**	***Butwal Regional Office***



Drawing	Minimum Lead for Side Angle Stays	*Nepal Electricity Authority* *Butwal Regional Office*
CSG-STAY-10		

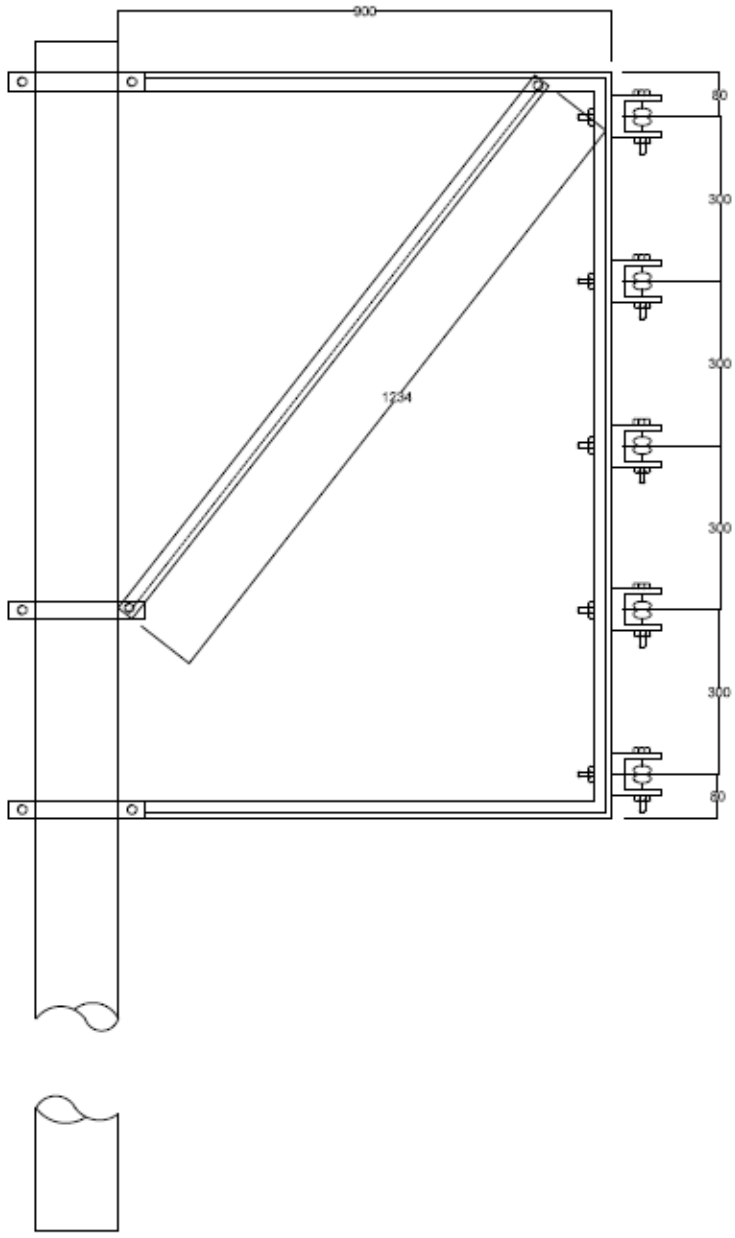


Drawing CSG-STAY-11	Hardware for Stay Set	*Nepal Electricity Authority* *Butwal Regional Office*

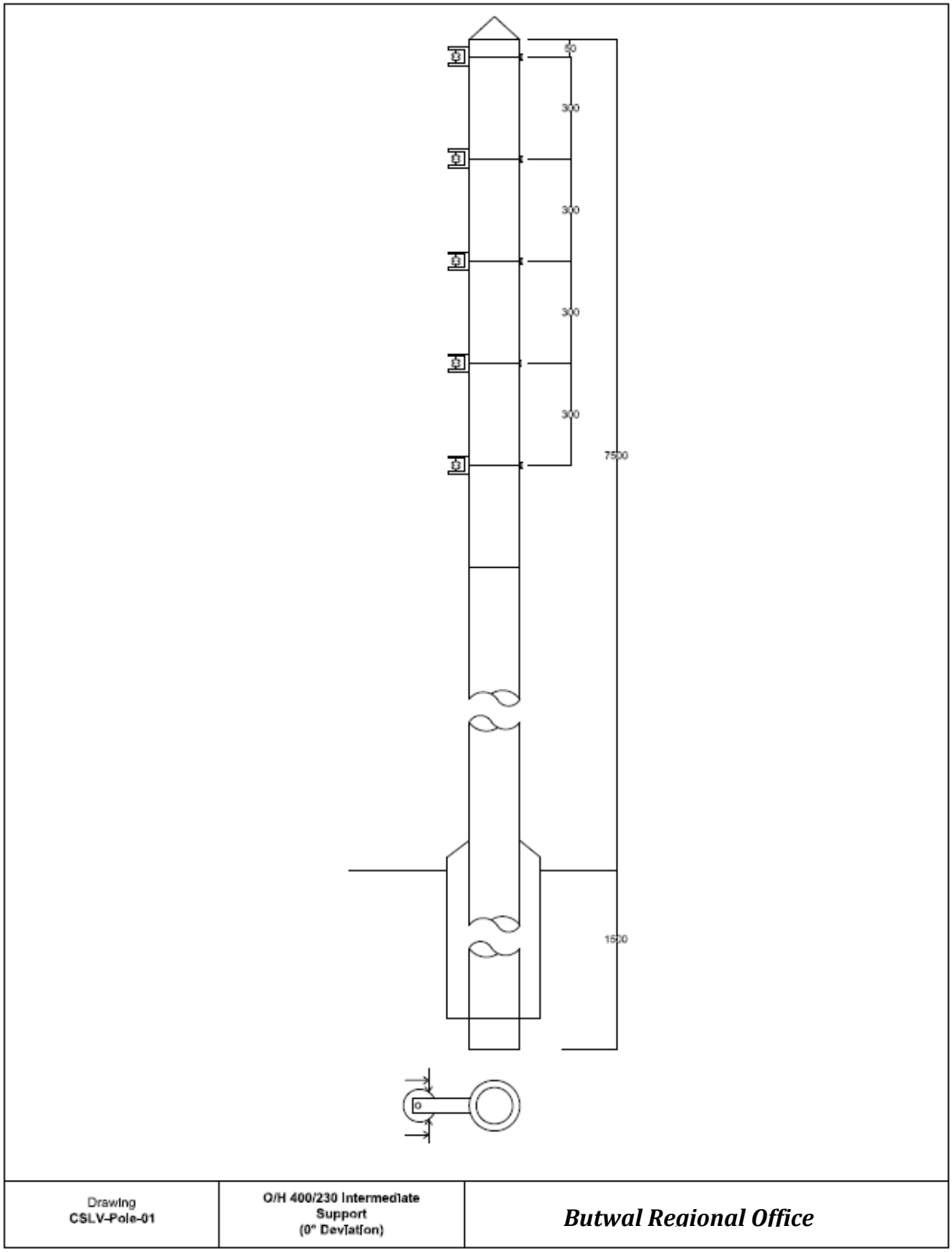


Wp = WIDTH OF CONCRETE POLE
d = DIAMETER OF ROUND POLE

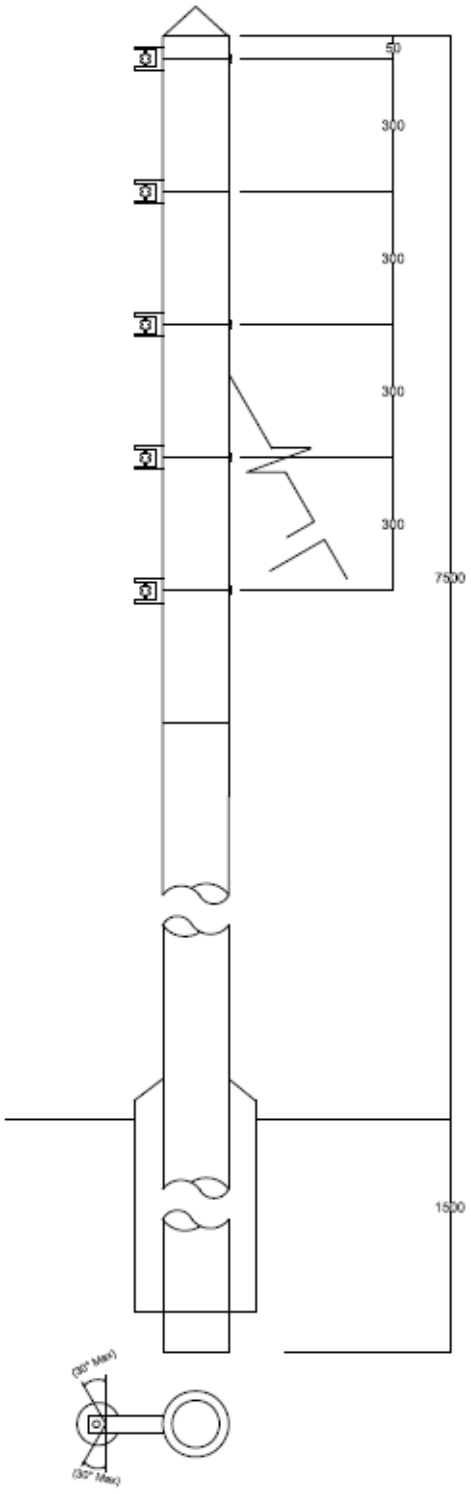
Drawing **CSLV-DB-01**	**D-Bracket for LV Line Support In Pole**	***Butwal Regional Office***



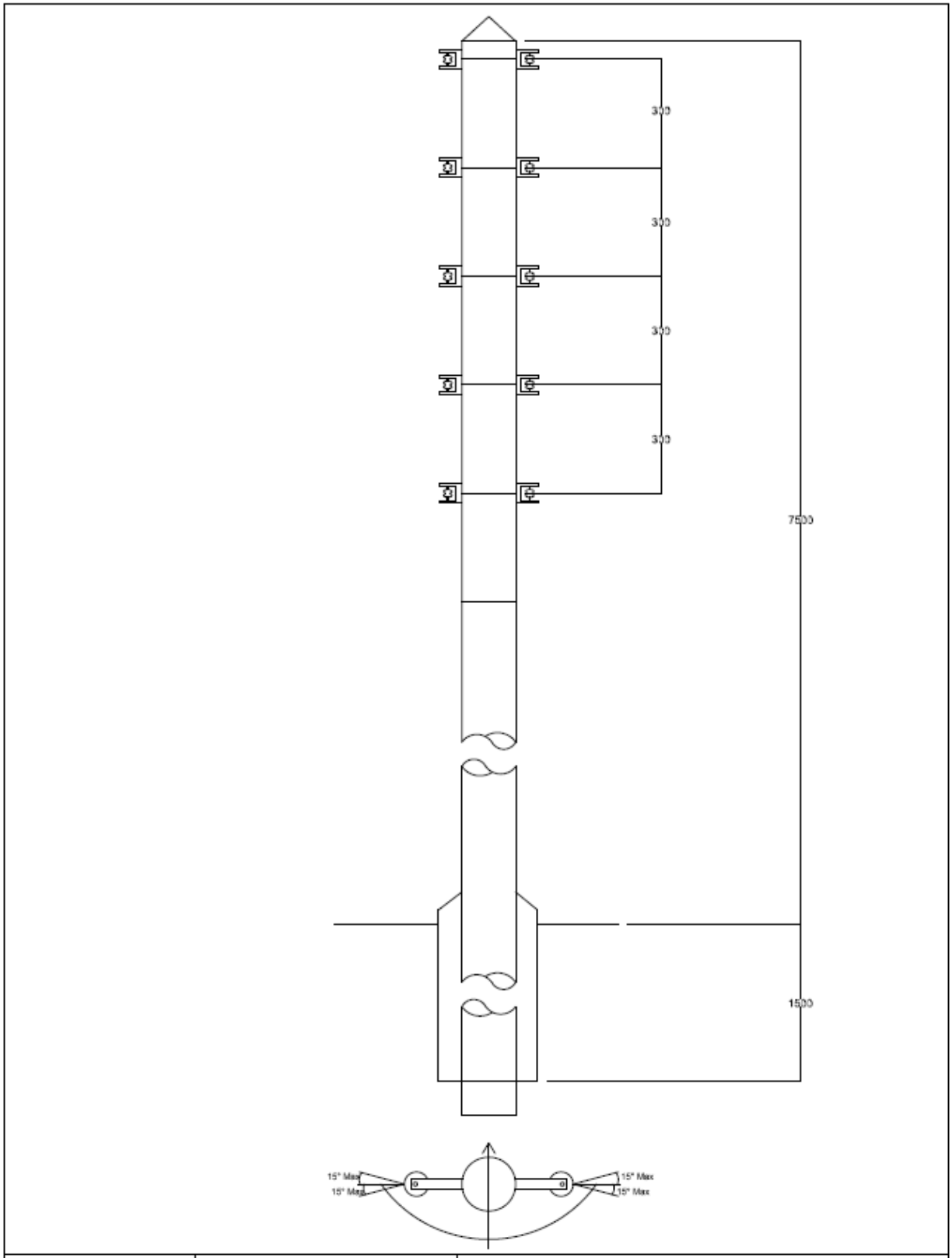
Drawing CSLV-DB-02	LV O/H LINE POLE WITH D-BRACKET	***Butwal Regional Office***



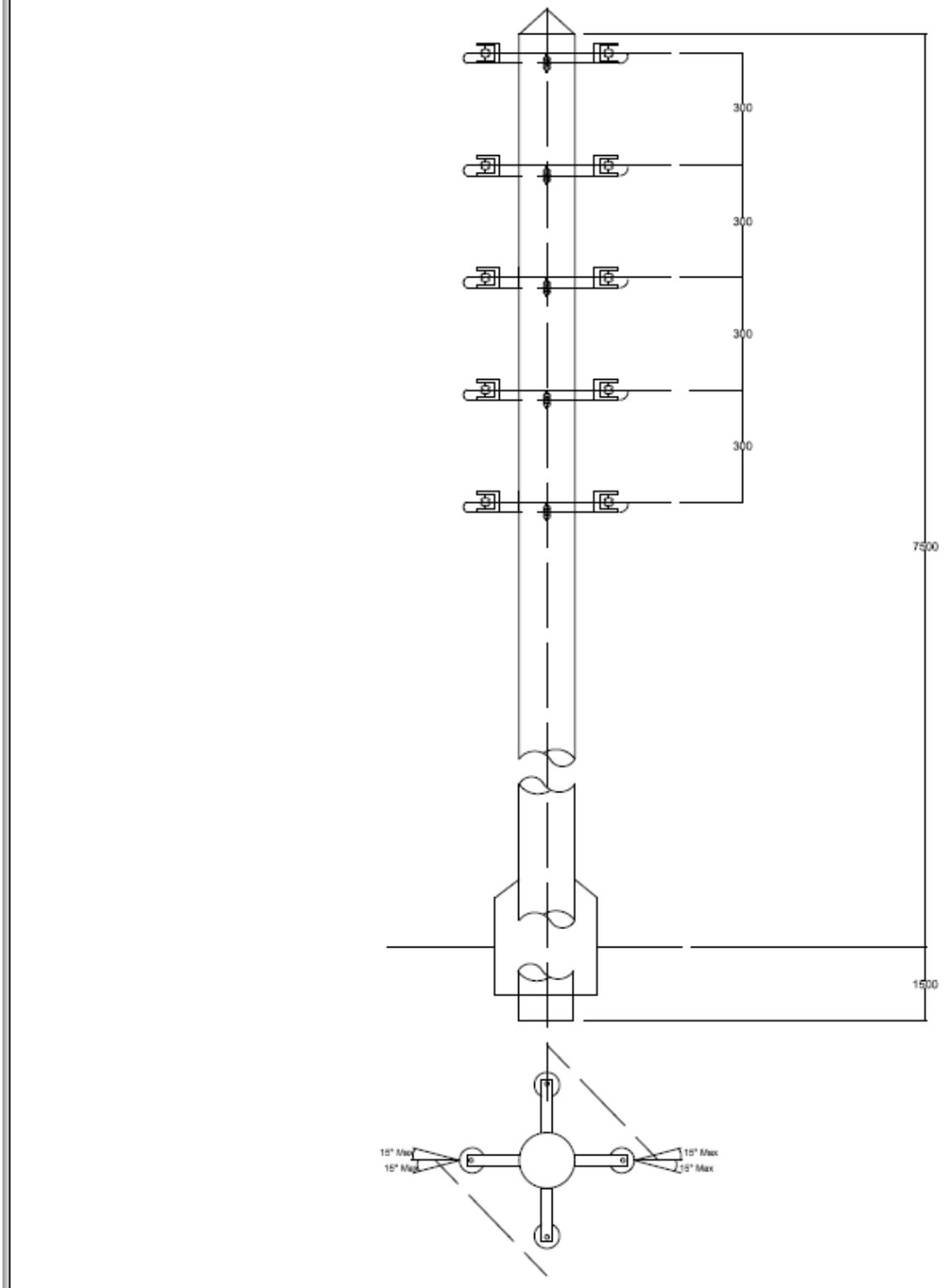
Drawing CSLV-Pole-01	O/H 400/230 Intermediate Support (0° Deviation)	***Butwal Regional Office***



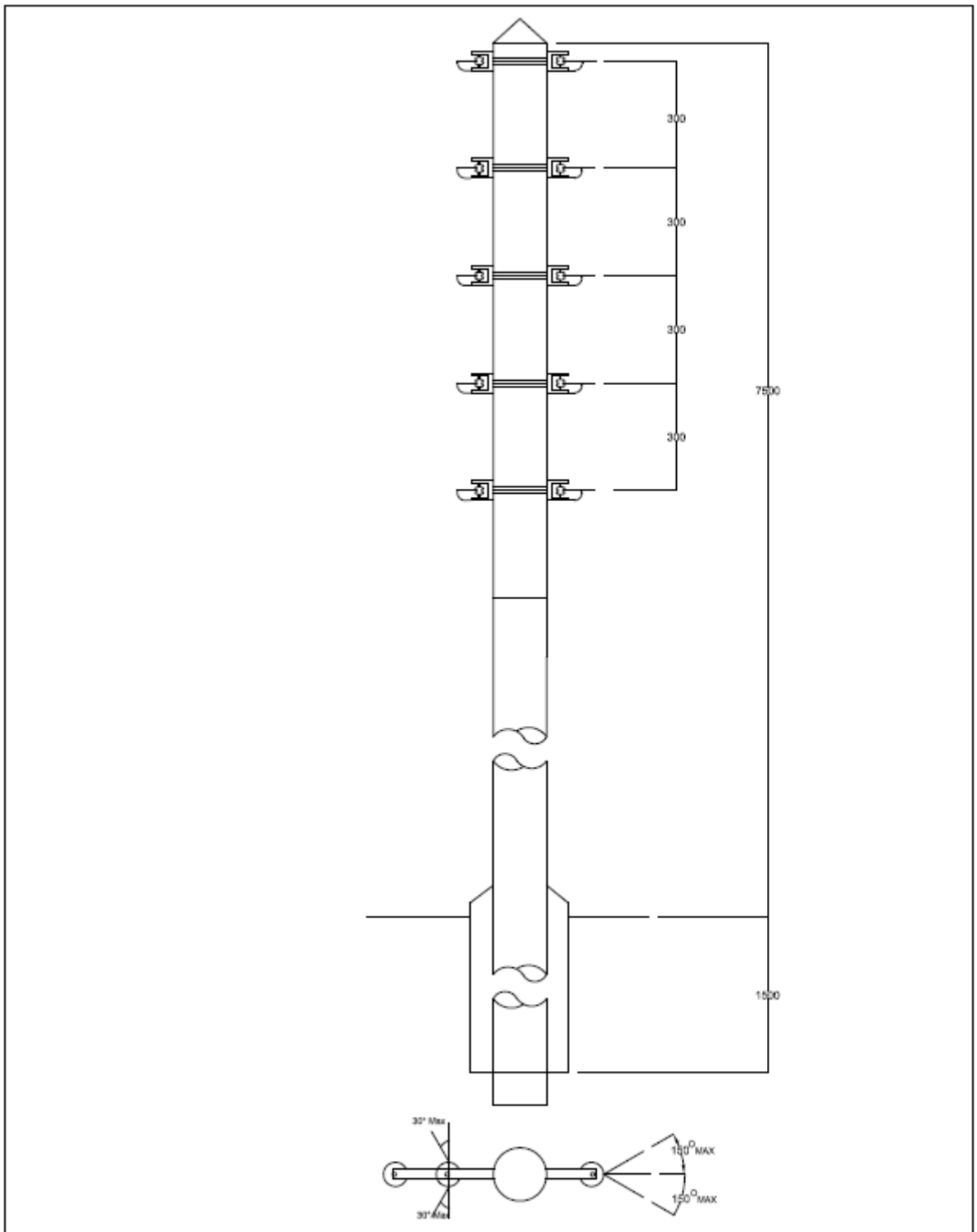
Drawing CSLV-Pole-02	O/H 400/230 V Angle Support (15° to 60° Deviation)	*Butwal Regional Office*



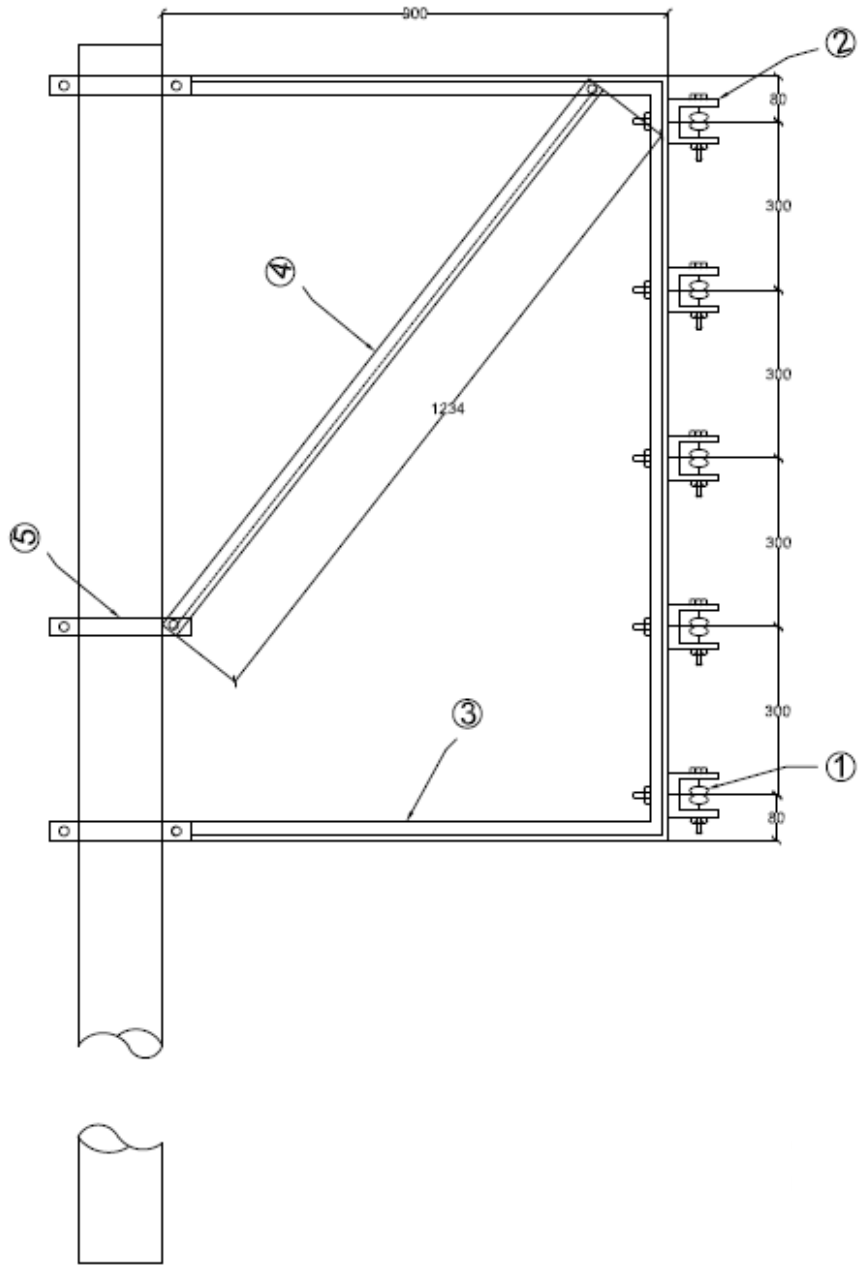
Drawing CSLV-Pole-03	O/H 400/230 V Angle Support (Deviations up to 30°)	***Butwal Regional Office***



Drawing CSLV-Pole-04	O/H 400/230 V Three or Four Way Arrangement (Deviation Over 30°)	***Butwal Regional Office***



Drawing CSLV-Pole-05	O/H 400/230 V Intermediate Angle Support with Tee - off Connection	**Butwal Regional Office**



Drawing CSLV-CC-06	LV O/H Line Pole with D - Bracket	***Butwal Regional Office***

SECTION - VI

Bill of Quantities[1]

Preamble of Bill of Quantities

A. General

1. The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, General and Special Conditions of Contract, Technical Specifications, and Drawings.

2. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Project Manager and valued at the rates and prices bid in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Project Manager may fix within the terms of the Contract.

3. For any item for which measurement is based on records made before or during construction the records shall be prepared and agreed between the Engineer and the Contractor. Should the Contractor carry out such work without the prior agreement of the Engineer, the Engineer may request the Contractor to carry out investigations to confirm the extent of the work and the quantity of work certified for payment shall be solely at the Engineer's discretion. The cost of any such investigation shall be borne by the Contractor.

4. The rates and prices bid in the priced Bill of Quantities shall, except as otherwise provided under the Contract, include all construction equipment, labor, supervision, materials, erection, maintenance, insurance, profit, taxes, and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract.

5. A rate or price shall be entered against each item in the priced Bill of Quantities, whether quantities are stated or not. The cost of items against which the Contractor has failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities.

6. The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the priced Bill of Quantities, and where no Items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work.

7. General directions and descriptions of work and materials are not necessarily repeated nor summarized in the Bill of Quantities. References to the relevant sections of the Contract documentation shall be made before entering prices against each item in the priced Bill of Quantities. The Specification Clause references where given in the item description of the Bills of Quantities are for the convenience of bidders and generally refer to

[1]In lump sum contracts, delete "Bill of Quantities" and replace with "Schedule of Activities" throughout this section.

the principal relevant- specification clause but do not necessarily represent the whole of the specification requirements for the work required within the item. The presence of a Specification clause reference shall not in any way reduce the Bidders obligation to complete work in accordance with all the requirements of the Specification.

8. Provisional Sums included and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Project Manager in accordance with the Conditions of Contract.

9. The method of measurement of completed work for payment shall be in accordance with the Specifications.

NEPAL ELECTRICITY AUTHORITY

Butwal Regional office

Kalikanagar Butwal

Tender No: BRO 2074/75-12(RE) "Supply , Delivery , Installation, Erection, Testing and Commissioning of Hadhade, Pipaldhara, Marbhung, Chhaphile, Jaisithok and other VDC Electrification, Gulmi".

Summary of BOQ

Name of Project	Total Amount With NRs					
	Material Cost	Labour Cost	Total material and labour cost	VAT 13 %	Total with VAT	Grand Total
Estimate of Hadhahade ,Pipaldhara, Marbhung, Chhaphile, Jasithok & Other VDC Elecrification, Gulmi						

Preapered by

Checked by

Approved by

NEPAL ELECTRICITY AUTHORITY

Butwal Regional office

Kalikanagar Butwal

Tender No: BRO 2074/75-12(RE)

BOQ of Detail Material of Hadhahada, pipaldhara, Marbhung, Chhaphile, Jasithok & other VDC Elecrification, Gulmi

S.N.	Description	Unit	Qty	Rate in figure,NRs	Amount in figure	*Remarks*
A.	**Material Cost**					
1	11meter Single Pole(Steel Tubular/ Folding)	Nos	352.00			
2	8 meter Single Pole(Steel Tubular/ Folding)	Nos	1397.00			
3	11 kV pin insulator with spindle	Set	1122.00			
4	(100x50x6.4x300 mm) Top Crossarm	Nos	264.00			
5	(100x50x6.4x1200 mm) Crossarm	Nos	264.00			
6	Pole Clamps With Nut & Bolt	Nos	880.00			
7	Nut & Bolts of 5/8" x Length as required for Single pole HT	Lot	264.00			
8	Nut & Bolts of 5/8" x Length as required for Double pole HT	Lot	44.00			
10	Nut & Bolts of 5/8" x Length as required for Transformer pole structure and transformer	Lot	22.00			
11	11 kV DO set (as per standard ANSI C37.41-198, ANSI C37.42,IEC 282-2 or equivalent)	Set	44.00			
12	11 KV Disc Insulator with deadend clamp	Set	264.00			
13	(5x50x718mm) arm brace with nut bolt	Nos	528.00			
14	Cross arm Channel (50x50x100x6.4x2390 mm)	Nos	88.00			
15	Bracing Angle (40*40*5*1995 mm)	Nos	88.00			
16	Bracing Angle (40*40*5*2200 mm)	Nos	88.00			
17	16x300 mm Double arming bolt with Nuts	Nos	176.00			
18	Flat extension G.I. Strip (6x75x300 mm)	Nos	264.00			
19	Shackle insulator with D-iron	Set	3944.00			
20	Nut & Bolts of 5/8" x required Length for LT pole structure	Nos	3944.00			
21	Flat extension G.I. Strip for LT cond. Stringing	Nos	792.00			
22	0.05 sq.in.cu.eq. ACSR Conductor for 11KV	km	48.51			
23	0.03 sq.in.cu.eq. ACSR Conductor	km	207.90			
24	Binding Wire suitable for 0.05 sq. inch ACSR conductor	lot	15.40			
25	Binding Wire suitable for 0.03 sq. inch ACSR conductor	lot	71.50			
26	PG Clamp suitable for 0.05 sq. inch ACSR conductor	Nos	138.60			
27	Stay rod (1.8 m*19 mm)	Set	175.00			
28	Turn buckle(ultimate tensile strength-4200Kg/sq.cm)					
29	Stay plate (6*600*600 mm)					
30	Thimble (Required Size)					
31	Stay Clamp					
32	Stay insulator	Nos	175.00			
33	Stay wire (7/8 SWG)	kg	1225.00			
34	Stay rod (1.8 m*16 mm)	Set	380.00			
35	Turn buckle(ultimate tensile strength-4200Kg/sq.cm)					
36	Stay plate (6*300*300 mm)					
37	Thimble (Required Size)					
38	Eye bolt (300 mm)					
39	Stay insulator	Nos	380.00			
40	Stay wire (7/12 SWG)	kg	1900.00			
41	11/0.4 kV,25 kVA, 3Ø transformer	Nos	0.00			
42	11/0.4 kV,50 kVA, 3Ø transformer	Nos	22.00			
43	11/0.4 kV,100 kVA, 3Ø transformer	Nos	0.00			
44	11 kV Drop Out Fuse (as per standard ANSI C37.41-1981,ANSI C37.42,IEC 282-2 or equivalent)	Set	0.00			
45	9 kV lightning arrestor (as per standard IEC 99-4 or equivalent)	Set	22.00			

46	Earthing set for Lightning Arrester & Transformer Neutral (2.5 meter long & 25 mm dia. Copper coated steel pipe with clamps and 16 sq. mm PVC Insulated Copper Wire).	Set	66.00			
47	Transformer platform complete as per specification and drawing.	Set	22.00			
48	100x50x6.4x2250 mm Channel	Nos	88.00			
49	MCCB 40A, 80 A,150 A (Short Circuit Current 35 KA for 1 Second),(Mitsubishi or Equivalent)	Nos	22.00			
50	50 to 100 mm^2 single core unarmored Aluminium Cable with necessary cable lug,shoes and etc.	m	704.00			
51	MCCB box with suitable busbar, pole clamp, fixing nut bolt etc	Nos	22.00			
	Total Material Cost					
B.	**Labour Cost**					
1.1	For HT Lines	km				
1.2	For LT Lines	km				
2	**Erection of pole including hauling from site store up to construction site, excavation of footing, making pole vertical and placing in footing, ramming, back filling for strengthening etc.**					
2.1	11 meter Pole(Steel Tubular/ Folding)	Nos	352.00			
2.2	8 meter Pole(Steel Tubular/ Folding)	Nos	1397.00			
2.3	Fitting charge for Tapping pole	Nos	0.00			
2.4	Fitting Charge of Additional Shackle Insulator	Nos	50.00			
3.0	**Fixing ASCR conductor of various site given below to pole with proper tension including hauling from site store to construction site laying conductor, given tension proper to conductor, fixing to pole, tying them by aluminium binding wire etc. all fixing work complete**					
3.1	0.05 sq.in.cu.eq. ACSR Conductor for 11KV 3 phase 3 wire	km	15.40			
3.2	30 mm2 ACSR conductor- Four Wire	km	27.50			
3.3	30 mm2 ACSR conductor -Three Wire	km	0.00			
3.4	30 mm2 ACSR conductor-Two Wire	km	44.00			
4.0	**Installation of stay including hauling from site store to construction site all fixing work complete**					
4.1	Stay for HT Line	Set	175.00			
4.2	Stay for LT Line	Set	380.00			
5.0	**Fixing Distribution Transformer (15,25, ... 200 kVA) Pole mounted including earthing set, L.A. D.O. fuse and G.O. switch etc complete**					
5.1	25 kVA (11/0.4 KV)	Nos				
5.2	50 kVA (11/0.4 KV)	Nos	22.00			
5.3	100 kVA (11/0.4 KV)	Nos				
6.0	**Installation of D.O. fuse set including hauling from site store to construction site all fixing work complete**	set				
	Total Labour Cost					
	Total Material & Labour Cost(A+B)					
	Total					
	VAT 13%					
	Grand Total					

NEPAL ELECTRICITY AUTHORITY

Butwal Regional office

Kalikanagar Butwal

Tender No:BRO 2074/75-12(RE)

BOQ of Material Cost(Construction unit wise) of Hadhahada, pipaldhara, Marbhung, Chhaphile, Jasithok & other VDc Elecrification, Gulmi

S.N.	Type	Description	Unit	Qty	Rate,NRs	Amount ,NRs	Remarks
2		**Supply and Erection of Poles With Accessories**					
2.1	A12	11 meter Single Pole(Steel Tubular/ Folding)	Nos	264.00			
2.5	C22	11 meter 11 KV O/H Line Double pole -Dead End Assembly(Steel Tubular/ Folding)	Nos	44.00			
2.10	G12	LT Poling - Four Wire (Steel Tubular/ Folding) - 8m	Nos	550.00			
2.12	G32	LT Poling -Two Wire ((Steel Tubular/ Folding) - 8m)	Nos	847.00			
2.13	H	Fitting Charge of Additional Shackle Insulator	Nos	50.00			
3		**Supply and Stringing of Conductor With Accessories**					
3.1	A	50 mm2 ACSR conductor for 11KV	Km	15.40			
3.2	B	30 mm2 ACSR conductor- Four Wire	Km	27.50			
3.4	D	30 mm2 ACSR conductor-Two Wire	Km	44.00			
4		**Installation of Stay With Accessories**					
4.1		**Stay for HT Line**	Set	175.00			
4.2		**Stay for LT Line**					
4.21	A	Single Stay	Set	380.00			
5		**Supply and Installation of Transformer With Accessories & section D/o Fitting**					
5.1	ii	50 kVA (11/0.4 KV)	Nos	22.00			
Total							
VAT 13%							
Grand Total							

NEPAL ELECTRICITY AUTHORITY

Butwal Regional office

Kalikanagar Butwal

Construction Unit - 2

Tender No:BRO 2074/75-12(RE)

BOQ of Unit Quantities for Supply of Poles with Accessories

Type	Description	Unit	QTY	Rate	Amount	Remarks
A12 Type (Single Pole for 11 kV)	11 meter Pole(Steel Tubular/ Folding)	nos.	1			
	11 kV pin insulator with spindle	nos.	3			
	(100x50x6.4x300 mm) Top Crossarm	nos.	1			
	(100x50x6.4x1200 mm) Crossarm	nos.	1			
	(5x50x718mm) arm brace with nut bolt	nos.	2			
	Pole Clamps With Nut & Bolt	nos.	2			
	Nut & Bolts of 5/8" x Length as required	Lot	1			
	Erection of Poles with accessories	nos.	1			
	Total					
C22 Type (11 KV O/H Line Double pole -Dead End Assembly)	11 meter Pole(Steel Tubular/Folding)	nos.	2			
	11 kV pin insulator with spindle	nos.	3			
	Cross arm Channel (50x50x100x6.4x2390 mm)	set	2			
	Bracing Angle (40*40*5*1995 mm)	nos.	2			
	Bracing Angle (40*40*5*2200 mm)	nos.	2			
	Flat extension G.I. Strip (6x75x300 mm)	nos.	6			
	11 KV Disc Insulator with deadend clamp	set	6			
	16x300 mm Double arming bolt with Nuts	pcs	4			
	Pole Clamp with Nut & Bolt	nos.	4			
	Nut & Bolts of 5/8" x Length as required	Lot	1			
	Erection of above pole with accessories	nos.	2			
	Total					
G12ype (LT Poling - Four Wire)	8 meter Pole(Steel Tubular/Folding)	nos.	1			
	Shackle insulator with D-iron	set	4			
	Nut & Bolts of 5/8" x required Length	nos.	4			
	Erection of above pole with accessories	nos.	1			
	Total					
G32 Type (LT Poling - Two Wire)	8 meter Pole(Steel Tubular/Folding)	nos.	1			
	Shackle insulator with D-iron	set	2			
	Nut & Bolts of 5/8" x required Length	nos.	2			
	Erection of above pole with accessories	nos.	1			
	Total					
H Type (Fitting Charge of Additional Shackle Insulator)	Shackle insulator with D-iron	set	1			
	Nu f 5/8" Length	nos.	1			
	Fit e for above accessories	nos.	1			
	Total					

NEPAL ELECTRICITY AUTHORITY

Butwal Regional office

Kalikanagar Butwal

Construction Unit - 3

Tender No:BRO 2074/75-12(RE)

BOQ of Unit Quantities for Supply of ACSR conductor(Per KM) with Accessories

Type	Description	Unit	QTY	Rate in Figure	Amount	Remarks
Type A (50 mm^2 ACSR conductor for 11KV)	0.05 sq.in.cu.eq. ACSR Conductor for 11KV	km	3.15			
	Binding Wire suitable for 0.05 sq. inch ACSR conductor	lot	1.00			
	PG Clamp suitable for 0.05 sq. inch ACSR conductor	nos	9.00			
	Stringing of Conductor With Accessories	km	1			
	Total					
Type B (30 mm^2 ACSR conductor-Four Wire)	0.03 sq.in.cu.eq. ACSR Conductor	km	4.2			
	Binding Wire suitable for 0.03 sq. inch ACSR conductor	lot	1			
	Flat extension G.I. Strip	nos	16			
	Stringing of Conductor With Accessories	km	1			
	Total					
Type D (30 mm^2 ACSR conductor-Two Wire)	0.03 sq.in.cu.eq. ACSR Conductor	km	2.1			
	Binding Wire suitable for 0.03 sq. inch ACSR conductor	lot	1			
	Flat extension G.I. Strip	nos	8			
	Stringing of Conductor With Accessories	km	1			
	Total					

NEPAL ELECTRICITY AUTHORITY

Butwal Regional office, Kalikanagar Butwal

Construction Unit - 4

Tender No:BRO 2074/75-12(RE), BOQ of Unit Quantities for Supply of Stay set for HT/LT Line

Type	Description	Unit	Qty	Rate	Amount	Remarks
A (Single Stay)	Stay rod (1.8 m*19 mm)	set	1			
	Turn buckle(ultimate tensile strength-4200Kg/sq.cm)					
	Stay plate (6*600*600 mm)					
	Thimble (Required Size)					
	Stay Clamp					
	Stay insulator	pcs	1			
	Stay wire (7/8 SWG)	kg	7			
	Installation of stay set with accessories	set	1			
	Total					

Price Schedules of Unit Quantities for Supply of Stay set for LT Line

Type	Description	Unit	Qty	Rate	Amount	Remarks
A (Single Stay)	Stay rod (1.8 m*16 mm)	set	1			
	Turn buckle(ultimate tensile strength-4200Kg/sq.cm)					
	Stay plate (6*300*300 mm)					
	Thimble (Required Size)					
	Eye bolt (300 mm)					
	Stay insulator	pcs	1			
	Stay wire (7/12 SWG)	kg	5			
	Installation of stay set with accessories	set	1			
	Total					

NEPAL ELECTRICITY AUTHORITY

Butwal Regional office

Kalikanagar Butwal

Construction Unit - 5

BRO 2074-75-12(RE)

BOQ of Unit Quantities for Supply of 50 KVA, 3Ø,11/0.4 KV Transformer with Accessories

S.N.	Description	Unit	Qty	Rate	Amount	Remarks
1	11/0.4 kV,50 kVA, 3Ø transformer	Nos	1			
2	11 kV DO set (as per standard ANSI C37.41-198, ANSI C37.42,IEC 282-2 or equivalent)	Set	2			
3	9 kV lightning arrestor (as per standard IEC 99-4 or equivalent)	Set	1			
4	11 KV Pin insulator with spindle	Set	9			
5	100x50x6.4x2250 mm Channel	Nos	4			
6	MCCB 80A (Short Circuit Current 35 KA for 1 Second) (Mitsubishi or Equivalent)	Nos	1			
7	MCCB box with suitable busbar, pole clamp, fixing nut bolt etc	Nos	1			
8	70 mm^2 single core unarmored Aluminium Cable with necessary cable lug,shoes and etc.	m	32			
9	Transformer platform complete as per specification and drawing.	Set	1			
10	Earthing set for Lightning Arrester & Transformer Neutral (2.5 meter long & 25 mm dia. Copper coated steel pipe with clamps and 16 sq. mm PVC Insulated Copper Wire).	Set	3			
11	Pole clamp with Nut & Bolt	Set	8			
12	Nut & Bolts of 5/8" x Length as required	Lot	1			
13	Installation of Transformer with accessories& Section D/o Fit.	Nos	1			
	Total					

Part - III

CONDITIONS OF CONTRACT AND CONTRACT FORMS

Table of Clauses

Section – VII General Conditions of Contract VII-1 to VII-33

A. General VII-2

1. Definitions VII-2
2. Interpretation VII-5
3. Language and Law VII-5
4. Project Manager's Decisions VII-5
5. Delegation VII-5
6. Communications VII-5
7. Subcontracting VII-6
8. Other Contractors VII-6
9. Personnel and Equipment VII-6
10. Employer's and Contractor's Risks VII-6
11. Employer's Risks VII-6
12. Contractor's Risks VII-7
13. Insurance VII-7
14. Site Investigation Reports VII-8
15. Contractor to Construct the Works VII-8
16. The Works to Be Completed within intended Completion Date VII-8
17. Design by contractor andApproval by the Project Manager VII-8
18. Safety VII-9
19. Discoveries VII-10
20. Possession of the Site VII-10
21. Access to the Site VII-10
22. Instructions, Inspections and Audits VII-10
23. Dispute Settlement VII-10
25. Procedures for Disputes VII-11

B. Time Control VII-11

26. Program VII-11
27. Extension of the Intended Completion Date VII-12
28. Acceleration VII-12
29. Delays Ordered by the Project Manager VII-12
30. Management Meetings VII-12
31. Early Warning VII-13

C. Quality Control VII-13

32. Identifying Defects VII-13
33. Tests VII-13
34. Correction of Defects VII-13
35. Uncorrected Defects VII-14

D. Cost Control VII-14

36. Contract Price VII-14
37. Changes in the Contract Price VII-14
38. Variations VII-15
39. Cash Flow Forecasts VII-16
40. Payment Certificates VII-16
41. Payments VII-16
42. Compensation Events VII-17
43. Tax VII-18
44. Currency VII-19
45. Price Adjustment VII-19
46. Retention VII-22
47. Liquidated Damages VII-22
48. Bonus VII-23
49. Advance Payment VII-23
50. Securities VII-24
51. Day works VII-24
52. Cost of Repairs VII-24

E. Finishing the Contract VII-24

53. Completion VII-24
54. TakingOver VII-25
55. Final Account VII-25
56. Operating and Maintenance Manuals VII-25
57. Termination VII-25
58. Fraud and Corruption VII-27
59. Black Listing VII-28
60. Payment upon Termination VII-28
61. Property VII-29

62.	Release from Performance	VII-29
63.	Suspension of DP Loan/Credit/ Grant	VII-29
64.	Project Manager's Duties and Authorities	VII-30
65.	Quarries and Spoil Dumps	VII-30
66.	Local Taxation	VII-30
67.	Value Added Tax	VII-30
68.	Income Taxes on Staff	VII-31
69.	Duties, Taxes and Royalties	VII-31
70.	Member of Government, etc., not Personally Liable	VII-31
71.	Approval of Use of Explosives	VII-32
72.	Compliance with Regulations for Explosives	VII-32
73.	Permission for Blasting	VII-32
74.	Records of Explosives	VII-32
75.	Traffic Diversion	VII-32

Section – VIII Special Conditions of Contract VIII-1 to VIII-17

A.	General	VIII-2
B.	Time Control	VIII-5
C.	Quality Control	VIII-6
D.	Cost Control	VIII-7
E.	Finishing the Contract	VIII-12

Section– IX Contract Forms IX-1 toIX-6

Letter of Intent	IX-2
Letter of Acceptance	IX-3
Contract Agreement	IX-4
Performance Security	IX-5
Advance Payment Security	IX-6

SECTION - VII
General Conditions of Contract

General Conditions of Contract

A. General	
1. Definitions	1.1 Boldface type is used to identify defined terms. (a) The **Accepted Contract Amount** means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects. (b) **The Activity Schedule** is a schedule of the activities comprising the construction, installation, testing, and commissioning of the Works in a lump sum contract. It includes a lump sum price for each activity, which is used for valuations and for assessing the effects of Variations and Compensation Events. (c) The **Adjudicator** is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in GCC 23.2 hereunder. (d) **Bill of Quantities** means the priced and completed Bill of Quantities forming part of the Bid. (e) **Compensation Events** are those defined in GCC 42 hereunder. (f) The **Completion Date** is the date of completion of the Works as certified by the Project Manager, in accordance with GCC 53.1. (g) The **Contract** is the Contract between the Employer and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in GCC 2.3 below. (h) The **Contractor** is the party whose Bid to carry out the Works has been accepted by the Employer. (i) The **Contractor's Bid** is the completed bidding document submitted by the Contractor to the Employer. (j) The **Contract Price** is the Accepted Contract Amount stated in the Letter of Acceptance and thereafter as adjusted in accordance with the Contract.

(k) **Days** are calendar days; months are calendar-months.

(l) **Day works** are varied work inputs subject to payment on a time basis for the Contractor's employees and Equipment, in addition to payments for associated Materials and Plant.

(m) A **Defect** is any part of the Works not completed in accordance with the Contract.

(n) The **Defects Liability Certificate** is the certificate issued by Project Manager upon correction of defects by the Contractor.

(o) The **Defects Liability Period** is the period calculated from the Completion Date where the Contractor remains responsible for remedying defects.

(p) **Drawings** include calculations and other information provided or approved by the Project Manager for the execution of the Contract.

(q) The **Employer** is the party who employs the Contractor to carry out the Works, as specified in the **SCC.**

(r) **Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

(s) **Force Majeure** means an exceptional event or circumstance: which is beyond a Party's control; which such Party could not reasonably have provided against before entering into the Contract; which, having arisen, such Party could not reasonably have avoided or overcome; and, which is not substantially attributable to the other Party.

(t) The **Initial Contract Price** is the Contract Price listed in the Employer's Letter of Acceptance.

(u) The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the **SCC**. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order.

(v) **Letter of Intent** is the letter of the Employer expressing his intention to award the contract.

(w) **Letter of Acceptance** means the formal acceptance by

	the Employer of the Bid and denotes the formation of the contract at the date of acceptance. (x) **Materials** are all supplies, including consumables, used by the Contractor for incorporation in the Works. (y) **"Party"**means the Employer or the Contractor, as the context requires. (z) **SCC** means Special Conditions of Contract (aa) **Plant** is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function. (bb) The **Project Manager** is the person named in the **SCC** (or any other competent person appointed by the employer and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract. (cc) **Retention Money**means the aggregate of all monies retained by the Employer pursuant to GCC 46.1. (dd) **Schedules** means the document(s) entitled schedules, completed by the Contractor and submitted with the Letter of Bids, as included in the Contract. Such document may include the Bill of Quantities, data, lists, and schedules of rates and/or prices. (ee) The **Site** is the area defined as such in the **SCC**. (ff) **Site Investigation Reports** are those that were included in the bidding documents and are factual and interpretativereports about the surface and subsurface conditions at theSite. (gg) **Specification** means the Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager. (hh) The **Start Date** is given in the **SCC.** It is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates. (ii) A **Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the

	work in the Contract, which includes work on the Site. (jj) **Temporary Works** are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works. (kk) A **Variation** is an instruction given by the Project Manager which varies the Works. (ll) The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the **SCC.**
2. Interpretation	2.1 In interpreting these GCC, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Project Manager shall provide instructions clarifying queries about these GCC. 2.2 If sectional completion is specified in the **SCC,** references in the GCC to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works). 2.3 The documents forming the Contract shall be interpreted in the following order of priority: (a) Contract Agreement, (b) Letter of Acceptance, (c) Contractor's Bid, (d) Special Conditions of Contract, (e) General Conditions of Contract, (f) Specifications, (g) Drawings, (h) Bill of Quantities (or Schedules of Prices for lump sum contracts), and (i) Any other document listed in the **SCC** as forming part of the Contract.
3. Language and Law	3.1 The language of the Contract and the law governing the Contract are stated in the **SCC.** **3.2** Throughout the execution of the Contract, the Contractor shall

	comply with the import of goods and services prohibitions in the Employer's country when (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 Borrower's Country prohibits any import of goods from, or any payments to, a particular country, person, or entity. Where the borrower's country prohibits payments to a particular firm or for particular goods by such an act of compliance, that firm may be excluded.
4. Contract Agreement	4.1 The Parties shall enter into a Contract Agreement within 15 days after the Contractor receives the Letter of Acceptance, unless the Special Conditions establish otherwise. The Contract Agreement shall be based upon the attached Contract forms in Section X.
5. Assignment	5.1 Neither Party shall assign the whole or any part of the Contract or any benefit or interest in or under the Contract. However, either Party (a) may assign the whole or any part with the prior agreement of the other Party, at the sole discretion of such other Party; and (b) may, as security in favor of a bank or financial institution, assign its right to any moneys due, or to become due, under the Contract.
6. Care and Supply Of Documents	6.1 The Specification and Drawings shall be in the custody and care of the Employer. Unless otherwise stated in the Contract, one copy of the Contract and of each subsequent Drawing shall be supplied to the Contractor, who may make or request further copies at the cost of the Contractor. 6.2 Each of the Contractor's Documents shall be in the custody and care of the Contractor, unless and until taken over by the Employer. Unless otherwise stated in the Contract, the Contractor shall supply to the Engineer six copies of each of the Contractor's Documents. 6.3 The Contractor shall keep, on the Site, a copy of the

	Contract, publications named in the Specification, the Contractor's Documents (if any), the Drawings and Variations and other communications given under the Contract. The Employer's Personnel shall have the right of access to all these documents at all reasonable times. 6.4 If a Party becomes aware of an error or defect in a document which was prepared for use in executing the Works, the Party shall promptly give notice to the other Party of such error or defect.
7. Confidential Details	7.1 The Contractor's and the Employer's Personnel shall disclose all such confidential and other information as may be reasonably required in order to verify the Contractor's compliance with the Contract and allow its proper implementation. 7.2 Each of them shall treat the details of the Contract as private and confidential, except to the extent necessary to carry out their respective obligations under the Contract or to comply with applicable Laws. Each of them shall not publish or disclose any particulars of the Works prepared by the other Party without the previous agreement of the other Party. However, the Contractor shall be permitted to disclose any publicly available information, or information otherwise required to establish his qualifications to compete for other projects. 7.3 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 Clause.
8. Compliance with Laws	8.1 The Contractor shall, in performing the Contract, comply with applicable Laws.
9. Joint and Several Liability	9.1 If the Contractor is a joint venture of two or more entities , all such entities shall be jointly and severally liable 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. The composition or the constitution of the joint venture shall not be altered without the prior consent of the Employer.
10. Project Manager's Decisions	10.1 Except where otherwise specifically stated, the Project Manager shall decide contractual matters between the Employer and the Contractor in the role representing the Employer.
11. Delegation	11.1 The Project Manager may delegate any of his duties and responsibilities to other people, except to the Adjudicator, after notifying the Contractor, and may cancel any delegation after notifying the Contractor.
12. Communications	12.1 Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is delivered.
13. Subcontracting	13.1 **For GoN Funded:** A list of approved Subcontractors including its value/works is included as Article 2 (k) of contract Agreement. 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. **For DP Funded :** The Contractor may subcontract with the approval of the Project Manager, but may not assign the Contract without the approval of the Employer in writing. Subcontracting shall not alter the Contractor's obligations. Bidders may propose subcontracting up to the percentage of total value of contracts as **specified in the SCC.** The Sub contractor shall meet the qualification requirement as specified in SCC.
14. Other Contractors	14.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer between the dates given in the Schedule of Other Contractors, as referred to in the SCC. The Contractor shall also provide facilities and services for them as described in the Schedule. The Employer may modify the Schedule of Other Contractors, and shall notify the Contractor of any such modification.

15. Personnel and Equipment	15.1 The Contractor shall employ the key personnel and use the equipment identified in its Bid to carry out the Works, or other personnel and equipment approved by the Project Manager. The Project Manager shall approve any proposed replacement of key personnel and equipment only if their relevant qualifications or characteristics are substantially equal to or better than those proposed in the Bid. 15.2 If the Project Manager asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract. 15.3If the Employer, Project Manager, or Contractor determines, that any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive, or other prohibited practices during the execution of the Works, then that employee shall be removed in accordance with Clause 15.2 above.
16. Employer's and Contractor's Risk	16.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.
17. Employer's Risks	17.1 From the Start Date until the Defects Liability Certificate has been issued, the following are Employer's risks: (a) The risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to (i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works or (ii) negligence, breach of statutory duty, or interference with any legal right by the Employer or by any person employed by or contracted to him except the Contractor. (b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault

	of the Employer or in the Employer's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed. 17.2 From the Completion Date until the Defects Liability Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is an Employer's risk except loss or damage due to (a) a Defect which existed on the Completion Date, (b) an event occurring before the Completion Date, which was not itself an Employer's risk, or (c) the activities of the Contractor on the Site after the Completion Date.
18. Contractor's Risks	18.1 From the Starting Date until the Defects Liability Certificate has been issued, the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Employer's risks are Contractor's risks.
19. Insurance	19.1 The Contractor shall provide insurance in the joint names of the Employer and the Contractor from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the **SCC** for the following events which are due to the Contractor's risks: (a) loss of or damage to the Works, Plant, and Materials; (b) loss of or damage to Equipment; (c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and (d) Personal injury or death.
	19.2 Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager for the Project Manager's approval before the Start Date. All such insurance shall provide for compensation to be payable in the proportions of Nepalese Rupees required to rectify the loss or damage incurred. 19.3 If the Contractor does not provide any of the policies

	and certificates required, the Employer may affect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due. 19.4 Alterations to the terms of insurance shall not be made without the approval of the Project Manager. 19.5 Both parties shall comply with any conditions of the insurance policies.
20. Site Investigation Reports	20.1 The Contractor, in preparing the Bid, shall rely on any Site Investigation Reports referred to in the **SCC,** supplemented by any information available to the Contractor.
21. Contractor to Construct the Works	21.1 The Contractor shall construct and install the Works in accordance with the Specifications and Drawings.
22. The Works to Be Completed within intended Completion Date	22.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program submitted by the Contractor, as updated with the approval of the Project Manager, and complete them within the intended Completion Date.
23. Design by contractor and Approval by the Project Manager	23.1 The contractor shall be responsible for the design of permanent works as specified in SCC. 23.2 Contractor shall be responsible for design of the Temporary Works. The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Project Manager, for his approval. 23.3 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, shall be subject to prior approval by the Project Manager before their use. 23.4 The Project Manager's approval shall not alter the Contractor's responsibility for design of temporary works.
24. Safety, Security and Protection of the	24.1 The Contractor shall, throughout the execution, and completion of the works and remedying of any defects

Environment	therein: a. Have full regard for the safety of all persons entitled to be upon the site and keep the site (so as the same is under his control) and the works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons. b. Provide and maintain at his own cost all lights, guards, fencing, warning signs and watching, when necessary or required by the Project Manager or by any duly constituted authority, for the protection of the Works of for the safety and convenience of the public or others. c. Take all reasonable steps to protect the environment on and off the site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation. d. Ensure that any cut or fill slopes are planted in grass or other plant cover as soon as possible to protect them from erosion. e. Any spoil or material removed from drains shall be disposed off to designated stable tipping areas as directed by the Project Manager. f. Shall not use fuel wood as a means of heating during the processing or preparation of any materials forming part of the works. g. The Project Manager shall have the power to disallow any working practice or activity of the Contractor or direct that such practices or activities be modified should the Project Manager consider, on the advice of the relevant Government Departments, that the practices or activities will be harmful to wildlife. h. Provide on the Site such life saving apparatus as may be appropriate and an adequate and easily accessible first aid outfit or such outfits as may be required by any government ordinance, factory act,

	etc., subsequently published and amended from time to time.
25. Discoveries	25.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site shall be the property of the Employer. The Contractor shall notify the Project Manager of such discoveries and carry out the Project Manager's instructions for dealing with them.
26. Possession of the Site	26.1 The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the SCC, the Employer shall be deemed to have delayed the start of the relevant activities, and this shall be a Compensation Event.
27. Access to the Site	27.1 The Contractor shall allow the Project Manager and any person authorized by the Project Manager access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.
28. Instructions, Inspections and Audits	28.1 The Contractor shall carry out all instructions of the Project Manager which comply with the applicable laws where the Site is located. 28.2 The Contractor shall keep, and shall make all reasonable efforts to cause its Subcontractors and sub consultants to keep accurate and systematic accounts and records in respect of the Works in such form and details as will clearly identify relevant time changes and costs. 28.3 The Contractor shall permit the GoN/DP and/or persons appointed by the GoN/DP to inspect the Site and/or the accounts and records of the Contractor and its sub-contractors relating to the performance of the Contract, and to have such accounts and records audited by auditors appointed by the GoN/DP if required by the GoN/DP. The Contractor's attention is drawn to Sub-Clause 58.2 which provides, inter alia, that acts intended to materially impede the exercise of the GoN's/DP's inspection and audit rights provided for under this Sub-Clause constitute a obstructive practice subject to contract termination.

29. Dispute Settlement	29.1 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. 29.2Any 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.
30. Procedures for Disputes	30.1 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.**
B. Staff and Labour	
31. Program	31.1 The Contractor shall not employ forced labor, which consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty. This covers any kind of involuntary or compulsory labor, such as indentured labor, bonded labor, or similar labor–contracting arrangements.
32. Child Labour	32.1 The Contractor shall not employ children in a manner that is economically exploitative, or is likely to be hazardous, 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. Where national laws have provisions for employment of minors, the Contractor shall follow those laws applicable to the Contractor. Children below the age of 18 years shall not be employed in dangerous work.
33. Non-discrimination and Equal Opportunity	32.1 The Contractor shall not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. The Contractor shall base the employment relationship on the principle of equal opportunity and fair treatment, and shall not

	discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, promotion, termination of employment or retirement, and discipline. In countries where national law provides for non-discrimination in employment, the Contractor shall comply with national law. When national laws are silent on nondiscrimination in employment, the Contractor shall meet this Sub clause's requirements. Special measures of protection or assistance to remedy past discrimination or selection for a particular job based on the inherent requirements of the job shall not be deemed discrimination.
C. Time Control	
34. Program	34.1 Within the time stated in the SCC, after the date of the Letter of Acceptance, the Contractor shall submit to the Project Manager for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works. In the case of a lump sum contract, the activities in the Program shall be consistent with those in the Activity Schedule. 34.2 An update of the Program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities. 34.3 The Contractor shall submit to the Project Manager for approval an updated Program at intervals no longer than the period stated in the SCC. If the Contractor does not submit an updated Program within this period, the Project Manager may withhold the amount stated in the SCC from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted. In the case of a lump sum contract, the Contractor shall Provide an updated Activity Schedule within 15 days of being instructed to by the Project Manager.

	34.4 The Project Manager's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Project Manager again at any time. A revised Program shall show the effect of Variations and Compensation Events.
35. Extension of the Intended Completion Date	35.1 The Project Manager shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work, which would cause the Contractor to incur additional cost. 35.2 The Project Manager shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Project Manager for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information at least 7 days prior to the intended completion date. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.
36. Acceleration	36.1 When the Employer wants the Contractor to finish before the Intended Completion Date, the Project Manager shall obtain priced proposals for achieving the necessary acceleration from the Contractor. If the Employer accepts these proposals, the Intended Completion Date shall be adjusted accordingly and confirmed by both the Employer and the Contractor. 36.2 If the Contractor's priced proposals for acceleration are accepted by the Employer, they are incorporated in the Contract Price and treated as a Variation.
37. Delays Ordered by the Project Manager	37.1 The Project Manager may instruct the Contractor to delay the start or progress of any activity within the Works.
38. Management Meetings	38.1 Either the Project Manager or the Contractor may require the other to attend a management meeting. The

	business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure. 38.2 The Project Manager shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken shall be decided by the Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.
39. Early Warning	39.1 The Contractor shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price, or delay the execution of the Works. The Project Manager may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible. 39.2 The Contractor shall cooperate with the Project Manager in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Project Manager.
D. Quality Control	
40. Identifying Defects	40.1 The Project Manager shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Project Manager may instruct the Contractor to search for a Defect and to uncover and test any work that the Project Manager considers may have a Defect.
41. Tests	41.1 If the Project Manager instructs the Contractor to carry out a test not specified in the Specification to check

	whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect, the test shall be a Compensation Event.
42. Correction of Defects	42.1 The Project Manager shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the **SCC**. The Defects Liability Period shall be extended for as long as Defects remain to be corrected. 42.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Project Manager's notice.
43. Uncorrected Defects	43.1 If the Contractor has not corrected a Defect within the time specified in the Project Manager's notice, the Project Manager shall assess the cost of having the Defect corrected, and the Contractor shall pay this amount.
E. Cost Control	
44. Contract Price	44.1 In the case of a Unit Rate contract, the Bill of Quantities shall contain priced items for the Works to be performed by the Contractor. The Bill of Quantities is used to calculate the Contract Price. The Contractor will be paid for the quantity of the work accomplished at the rate in the Bill of Quantities for each item. 44.2 In the case of a lump sum contract, the Activity Schedule shall contain the priced activities for the Works to be performed by the Contractor. The Activity Schedule is used to monitor and control the performance of activities on which basis the Contractor will be paid. If payment for Materials on Site shall be made separately, the Contractor shall show delivery of Materials to the Site separately on the Activity Schedule.
45. Changes in the Contract Price	45.1 In the case of an Unit Rate contract: (a) If the final quantity of the work done differs from the

	quantity in the Bill of Quantities for the particular itemby more than 25 percent, provided the change exceeds 2 percent of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change. (b) The Project Manager shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 10 percent, except with the prior approval of the Employer. (c) If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the Bill of Quantities. 45.2 In the case of a lump sum contract, the Activity Schedule shall be amended by the Contractor to accommodate changes of Program or method of working made at the Contractor's own discretion. Prices in the Activity Schedule shall not be altered when the Contractor makes such changes to the Activity Schedule.
46. Variations	46.1 All Variations shall be included in updated Programs, and, in the case of a lump sum contract, also in the Activity Schedule, produced by the Contractor. 46.2 The Contractor shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager. The Project Manager shall assess the quotation, which shall be given within seven (7) days of the request or within any longer period stated by the Project Manager and before the Variation is ordered. 46.3 If the Contractor's quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the Variation on the Contractor's costs. 46.4 If the Project Manager decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be

	treated as a Compensation Event. 46.5 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning. 46.6 In the case of an Unit Rate contract, if the work in the Variation corresponds to an item description in the Bill of Quantities and if, in the opinion of the Project Manager, the quantity of work above the limit stated in GCC 45.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work.
47. Cash Flow Forecasts	47.1 When the Program, or, in the case of a lump sum contract, the Activity Schedule, is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast.

48. Payment Certificates	48.1 The Contractor shall submit to the Project Manager monthly statements of the estimated value of the work executed less the cumulative amount certified previously. 48.2 The Project Manager shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor within 30 days of submission by contractor. 48.3 The value of work executed shall be determined by the Project Manager. 48.4 The value of work executed shall comprise: (a) In the case of an Unit Rate contract, the value of the quantities of work in the Bill of Quantities that have been completed; or (b) In the case of a lump sum contract, the value of work executed shall comprise the value of completed activities in the Activity Schedule. 48.5 The value of work executed shall include the valuation of Variations and Compensation Events. 48.6 The Project Manager may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.
49. Payments	49.1 Payments shall be adjusted for deductions for advance payments and retention. The Employer shall pay the Contractor the amounts certified by the Project Manager within 30 days of the date of each certificate. If the Employer makes a late payment, the Contractor shall be paid interest as indicated in the **SCC** on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made. 49.2 If an amount certified is increased in a later certificate or as a result of an award by the Adjudicator or an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this

	clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute. 49.3 Items of the Works for which no rate or price has been entered in BOQ shall not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.
50. Compensation Events	50.1 The following shall be Compensation Events: (a) The Employer does not give access to a part of the Site by the Site Possession Date pursuant to GCC 26.1. (b) The Employer modifies the Schedule of Other Contractors in a way that affects the work of the Contractor under the Contract. (c) The Project Manager orders a delay or does not issue Drawings, Specifications, or instructions required for execution of the Works on time. (d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no Defects. (e) The Project Manager unreasonably does not approve a subcontract to be let. (f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site. (g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons. (h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.

	(i) The advance payment is delayed. (j) The effects on the Contractor of any of the Employer's Risks. (k) The Project Manager unreasonably delays issuing a Certificate of Completion. 50.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date shall be extended. The Project Manager shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended. 50.3 As soon as information demonstrating effect of each Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager shall assume that the Contractor shall react competently and promptly to the event. 50.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor's not having given early warning or not having cooperated with the Project Manager.
51. Tax	51.1 The Project Manager shall adjust the Contract Price if taxes, duties, and other levies are changed between the date 30 days before the submission of bids for the Contract and the date of the last Completion certificate. The adjustment shall be the change in the amount of tax payable by the Contractor, provided such changes are not already reflected in the Contract Price or are a result of GCC 53.

52. Currency	52.1 The currency of Contracts shall be Nepalese Rupees.
53. Price Adjustment	53.1 Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the **SCC.** If so provided, the amounts certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due. 53.2 **Adjustment Formulate[1]:** The formulae will be of the following general type: $$pn = A + b\frac{Ln}{Lo} + c\frac{Mn}{Mo} + d\frac{En}{Eo} + etc.$$ Where: **pn** is a price adjustment factor to be applied to the amount for the payment of the work carried out in the subject month, determined in accordance with Sub-Clause 49; **A** is a constant, specified in the Bidding Forms- Table of Price Adjustment data, representing the nonadjustable portion in contractual payments;[2] **b, c, d,** etc., coefficients representing the estimated proportion of each cost element (labor, materials, equipment usage, etc.) in the Works or sections thereof, net of Provisional Sums, as specified in the SCC; **Ln, Mn, En,** etc., are the current cost indices or reference prices of the cost elements for month "n," determined pursuant to Sub-Clause 53.4, applicable to each cost element; and

[1] For complex Works involving several types of construction work with different inputs, a family of Formulae will be necessary. The various items of Day work may also require different formulae, depending on the nature and source of the inputs

[2] Insert a figure for factor A only where there is a part of the Contractors' expenditures which will not be subject to fluctuation in cost or to compensate for the unreliability of some indices. A should normally be 0.15. The sum of A, b, c, d, etc., should be one.

	Lo, Mo, Eo, etc., are the base cost indices or reference prices corresponding to the above cost elements at the date specified in Sub-Clause 53.4
	53.3 **Sources of Indices and Weightings:** The sources of indices shall be those listed in the Bidding Forms- Table of Price Adjustment data, as approved by the Project Manager and stated in SCC. Indices shall be appropriate for their purpose and shall relate to the Contractor's proposed source of supply of inputs on the basis of which his Contract shall have been computed. As the proposed basis for price adjustment, the Contractor shall have submitted with his bid the tabulation of Weightings and Source of Indices in the Bidding Forms, which shall be subject to approval by the Project Manager. 53.4 **Base, Current and Provisional Indices:** The base cost indices or prices shall be those prevailing on the day 30 days prior to the latest date for submission of bids. Current indices or prices shall be those prevailing on the day 30 days prior to the last day of the period to which a particular Interim Payment Certificate is related. If at any time the current indices are not available, provisional indices as determined by the Project Manager will be used, subject to subsequent correction of the amounts paid to the Contractor when the current indices become available. 53.5**Weightings:** The weightings for each of the factors of cost given in the Bidding Forms shall be adjusted if, in the opinion of the Project Manager, they have been rendered unreasonable, unbalanced or inapplicable as a result of varied or additional work already executed or instructed under Clause 46 or for any other reason.
	53.6Where, price adjustment provision is not applicable pursuant to Sub-clause 45.1 then the Contract is subject to price adjustment only for construction material in accordance with this clause. If the prices of the construction materials stated in the contract is increased or decreased in an unexpected manner in excess of ten

	(10%) percent in comparison to the base price construction material stated in Section –IV, Bidding Forms-Table of Price Adjustment Data, then the price adjustment for the increase or decrease of price of the construction material beyond 10% shall be made by applying the following formulas: For unexpected increase in price $P = [R_1 - (R_0 \times 1.10)] \times Q$ For unexpected decrease in price P $= [R_1 - (R_0 \times 0.90)] \times Q$ Where: "P" is price adjustment amount "R_1" is the present price of the construction material (Source of indices shall be those listed in the Bidding forms) "R_0" is the base price of the construction material "Q" is quantity of the construction material consumed in construction during the period of price adjustment consideration If the Base price and source is to be proposed by the Bidder as per the provision made in Section –IV, Bidding Forms-Table of Price Adjustment Data then the Base price and source filled by Bidder for the construction material stated in the Bidding Form shall be subject to the approval of the Project manager and shall be as stated in SCC.. 53.7 The Price Adjustment amount shall be limited to a maximum of the initial Contract Amount as specified in the **SCC**. 53.8 The Price Adjustment provision shall not be applicable for delayed period if the contract is not completed in time due to the delay caused by the contractor or the contract is a Lump sum Contract or a Fixed Budget Contract.
54. Retention	54.1 The Employer shall retain from each payment due to the Contractor the proportion stated in the SCC until

	Completion of the whole of the Works. 54.2 Upon the issue of a Defects Liability Certificate by the Project Manager, in accordance with GCC 70.1, half the total amount retained shall be repaid to the Contractor and half when the Contractor has submitted the Tax evidence document issued by the concerned Internal Revenue Office that the contractor has submitted his Income Returns . On completion of the whole works, the Contractor may substitute retention money with an "on demand" bank guarantee.
55. Liquidated Damages	55.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the **SCC** for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount defined in the **SCC**. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities. 55.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in GCC.49
56. Bonus	56.1 The Contractor shall be paid a Bonus calculated at the rate per calendar day stated in the **SCC** for each day (less any days for which the Contractor is paid for acceleration) that the Completion is earlier than the Intended Completion Date. The Project Manager shall certify that the Works are complete, although they may not be due to be complete.
57. Advance Payment	57.1 The Employer shall make advance payment to the Contractor of the amounts stated in the SCC in two equal installments by the date **stated in the SCC**, against provision by the Contractor of an unconditional bank guarantee from 'A' class commercial Bank in a form acceptable to the Employer in amounts equal to the advance payment. The guarantee shall remain

	effective until the advance payment has been repaid, but the amount of the guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest shall not be charged on the advance payment.
	57.2 The Contractor is to use the advance payment only to pay for Equipment, Plant, Materials, and mobilization expenses required specifically for execution of the Contract. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Project Manager. 57.3 The advance payment shall be repaid by deducting proportionate amounts, as stated in SCC, from payments otherwise due Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, Variations, price adjustments, Compensation Events, Bonuses, or Liquidated Damages.
58. Securities	58.1 The Performance Security, including any additional security required as per ITB 35.5 and ITB 40.1, shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount **specified in the SCC,** by a 'A' class commercial bank acceptable to the Employer, and denominated in Nepalese Rupees. The Performance Security shall be valid until a date 30 days from the date of issue of the Defect Liability Certificate in the case of a bank guarantee Any Additional Performance Security required as per ITB 35.5 shall be valid until a date 30 days from the date of issue of the Certificate of Completion in the case of a bank guarantee Any additional performance security required as per ITB 40.1 shall be valid until a date 30 days from the date of issue of the certificate of DLP in the case of a bank guarantee. 58.2 The performance security issued by any foreign Bank outside Nepal must be counter guaranteed by an "A"

	class commercial Bank in Nepal.
59. Day works	59.1 If applicable, the Day works rates in the Contractor's Bid shall be used for small additional amounts of work only when the Project Manager has given written instructions in advance for additional work to be paid for in that way. 59.2 All work to be paid for as Day works shall be recorded by the Contractor on forms approved by the Project Manager. Each completed form shall be verified and signed by the Project Manager within two days of the work being done. 59.3 The Contractor shall be paid for Day works subject to obtaining signed Day works forms.
60. Cost of Repairs	60.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.
F. Force Majeure	
61. Definition Of Force Majeure	61.1 In this Clause, "Force Majeure" means an exceptional event or circumstance, (a) which is beyond a Party's control; (b) which such Party could not reasonably have provided against before entering into the Contract; (c) which, having arisen, such Party could not reasonably have avoided or overcome; and (d) which is not substantially attributable to the other Party. 61.2 Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied: (a) war, hostilities (whether war be declared or not),

	invasion, act of foreign enemies; (b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war; (c) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel; (d) munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity; and (e) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.
62. Notice To Force Majeure	62.1 If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure. 62.2 The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them. 62.3 Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.
63. Duty to Minimize Delay	63.1 Each Party shall at all times use all reasonable endeavors to minimize any delay in the performance of the Contract as a result of Force Majeure. 63.2 A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.

64. Consequences of Force Majeure	64.1 If the Contractor is prevented from performing its substantial obligations under the Contract by Force Majeure of which notice has been given under GCC 62, and suffers delay and/or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled subject to GCC 30 to (a) an extension of time for any such delay, if completion is or will be delayed, under GCC35 ; and (b) if the event or circumstance is of the kind described in sub-paragraphs (a) to (d) of GCC 61.2 and, in the case of subparagraphs (b) to (d), occurs in the Country, payment of any such Cost, including the costs of rectifying or replacing the Works and/or Goods damaged or destructed by Force Majeure, to the extent they are not indemnified through the insurance policy referred to in GCC 19. 64.2 After receiving this notice, the Project Manager shall proceed in accordance with GCC 10 to agree or determine these matters.
65. Force Majeure Affecting Subcontractor	65.1 If any Subcontractor is entitled under any contract or agreement relating to the Works to relief from force majeure on terms additional to or broader than those specified in this Clause, such additional or broader force majeure events or circumstances shall not excuse the Contractor's nonperformance or entitle him to relief under this Clause.
66. Optional Termination, Payment and Release	66.1 If the execution of substantially all the Works in progress is prevented for a continuous period of 90 days by reason of Force Majeure of which notice has been given under GCC 62, or for multiple periods which total more than 150 days due to the same notified Force Majeure, then either Party may give to the other Party a notice of termination of the Contract. In this event, the termination shall take effect 7 days after the notice is given, and the Contractor shall proceed in accordance with GCC 72.5.

	66.2 Upon such termination, the Project Manager shall determine the value of the work done and issue a Payment Certificate, which shall include (a) the amounts payable for any work carried out for which a price is stated in the Contract; (b) the Cost of Plant and Materials ordered for the Works which have been delivered to the Contractor, or of which the Contractor is liable to accept delivery: this Plant and Materials shall become the property of (and be at the risk of) the Employer when paid for by the Employer, and the Contractor shall place the same at the Employer's disposal; (c) other Costs or liabilities which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works; (d) the Cost of removal of Temporary Works and Contractor's Equipment from the Site and the return of these items to the Contractor's works in his country (or to any other destination at no greater cost); and (e) the Cost of repatriation of the Contractor's staff and labor employed wholly in connection with the Works at the date of termination.
67. Release from Performance	67.1 Notwithstanding any other provision of this Clause, if any event or circumstance outside the control of the Parties (including, but not limited to, Force Majeure) arises, which makes it impossible or unlawful for either or both Parties to fulfill its or their contractual obligations or which, under the law governing the Contract, entitles the Parties to be released from further performance of the Contract, then upon notice by either Party to the other Party of such event or circumstance, (a) the Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract; and (b) the sum payable by the Employer to the

	Contractor shall be the same as would have been payable under GCC 66 if the Contract had been terminated under GCC 66
G. Finishing the Contract	
68. Completion	68.1 The Contractor shall request the Project Manager to issue a certificate of Completion of the Works, and the Project Manager shall do so upon deciding that the work is completed.
69. Taking Over	69.1 The Employer shall take over the Site and the Works within seven days of the Project Manager's issuing a certificate of Completion.
70. Final Account	70.1 The Contractor shall supply the Project Manager with a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 60 days of receiving the Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within 60 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Project Manager shall decide on the amount payable to the Contractor and issue a payment certificate.
71. Operating and Maintenance Manuals	71.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the **SCC.** 71.2 If the Contractor does not supply the Drawings and/or manuals by the dates **stated in the SCC** pursuant to GCC 71.1, or they do not receive the Project Manager's approval, the Project Manager shall withhold the amount **stated in the SCC** from payments due to the Contractor.
72. Termination	72.1 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. 72.2 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract. 73.3 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 Project Manager gives two consecutive Notices to update the Program and accelerate the works to ensure compliance with GCC Sub clause 22.1 and the Contractor fails to update the Program and demonstrate acceleration of the works within a reasonable period of time determined by the Project

	Manager; (h) the Contractor does not maintain a Security, which is required; and (i) 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. (j) 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 73.1. 72.4 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 57.2 above, the Project Manager shall decide whether the breach is fundamental or not. 72.5 Notwithstanding the above, the Employer may terminate the Contract for convenience. 72.6 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.
73. Fraud and Corruption	73.1 If the Employer determines that the Contractor has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices, in competing for or in executing the Contract, then the Employer may, after giving 15 days notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site. 73.2 Should any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive, or obstructive practice during the execution of the Works, then that employee shall be removed in accordance with GCC Clause 15. For the purposes of this GCC 73; (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"[3] 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"[4] 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"[5] 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 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

[3] a "party" refers to a public official; the terms "benefit" and "obligation" relate to the procurement process or contract execution; and the "act or omission" is intended to influence the procurement process or contract execution.

[4] "parties" refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

[5] a "party" refers to a participant in the procurement process or contract execution.

	provided for under Sub-Clause 28.3.
74. Black Listing	74.1 Without prejudice to any other rights of the Employer under this Contract, GoN, Public Procurement Monitoring Office (PPMO), on the recommendation of procuring entity, may blacklist a Bidder for its conduct for a period of one (1) to three (3) years on the following grounds and seriousness of the act committed by the bidder. (a) if it is established that the Contractor has committed substantial defect in implementation of the contract or has not substantially fulfilled its obligations under the contract or the completed work is not of the specified quality as per the contract. (b) If convicted from a court of law in a criminal offense liable to be disqualified for taking part in procurement contract, (c) If it is established that the Contractor has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.
75. Payment upon Termination	75.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Project Manager shall issue a certificate for the value of the work done and Materials ordered less advance payments received up to the date of the issue of the certificate. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable to the Employer. 75.2 If the Contract is terminated for the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Project Manager shall issue a certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate.

	75.3 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.
76. Property	76.1 All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Employer if the Contract is terminated because of the Contractor's default.
77. Release from Performance	77.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor, the Project Manager shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.
78. Suspension of DP Loan/Credit/Grant	78.1 In the event that the Donor Agency suspends the loan/ credit/grant to the Employer from which part of the payments to the Contractor are being made: a. the Employer is obligated to notify the Contractor of such suspension within 7 days of having received the Donor Agency's suspension notice; and b. if the Contractor has not received sums due him within the 30 days for payment provided for in Sub-Clause 49.1, the Contractor may immediately issue a 15-day termination notice.
79. Eligibility	79.1 The Contractor shall have the nationality of an eligible country as specified in Section V of the bidding document. The Contractor shall be deemed to have the nationality of a country if the Contractor 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 subcontractors or suppliers for any part of the Contract including related services. 79.2 The materials, equipment, and services to be supplied under the Contract shall have their origin in eligible source countries as specified in Section V of the bidding document and all expenditures under the Contract will be limited to such materials, equipment, and services. At the Employer's request, the Contractor may be required to provide evidence of the origin of materials, equipment, and services. 79.3 For purposes of GCC 79.2, "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.
80. Project Manager's Duties and Authorities	80.1 The Project Manager's duties and authorities are restricted to the extent as stated in the SCC.
81. Quarries and Spoil Dumps	81.1 Any quarry operated as part of this Contract shall be maintained and left in a stable condition without steep slopes and be either refilled or drained and be landscaped by appropriate planting. Rock or gravel taken from a river shall be removed over some distance so as to limit the depth of material removed at any one location, not disrupt the river flow or damage or undermine the river banks. The Contractor shall not deposit excavated material on land in Government or private ownership except as directed by the Project Manager in writing or by permission in writing of the authority responsible for such land in Government ownership, or of the owner or responsible representative of the owner of such land in private ownership, and only then in those places and under such

	conditions as the authority, owner or responsible representative may prescribe.
82. Local Taxation	82.1 The prices tendered by the Contractor shall include all taxes that may be levied in accordance to the laws and regulations in being in Nepal on the date 30 days prior to the closing date for submissions of Bids on the Contractor's equipment, plant and materials acquired for the purpose of the Contract and on the services performed under the Contract. Nothing in the Contract shall relieve the Contractor from his responsibility to pay any tax that may be levied in Nepal on profits made by him in respect of the Contract.
83. Value Added Tax	83.1 The Contract is not exempted from value added tax. An amount specified in the schedule of taxes shall be paid by the Contractor in the concerned VAT office within time frame specified in VAT regulation.
84. Income Taxes on Staff	84.1 The Contractor's staff, personnel and labor will be liable to pay personal income taxes in Nepal in respect of their salaries and wages, as are chargeable under the laws and regulations for the time being in force, and the Contractor shall perform such duties in regard to such deductions as may be imposed on him by such laws and regulations. 84.2 The issue of the Final Account Certificate pursuant to clause GCC 70 shall be made only upon submittal by the Contractor of a certificate of income tax clearance from the Government of Nepal.
85. Duties, Taxes and Royalties	85.1 Any element of royalty, duty or tax in the price of any goods including fuel oil, and lubricating oil, cement, timber, iron and iron goods locally procured by the Contractor for the works shall be included in the Contract rates and prices and no reimbursement or payment in that respect shall be made to the Contractor. 85.2 The Contractor shall familiarize himself with GON the rules and regulations with regard to customs, duties, taxes, clearing of goods and equipment, immigration and the like, and it will be necessary for him to follow the

	required procedures regardless of the assistance as may be provided by the Employer wherever possible. 85.3 The Contractor shall pay and shall not be entitled to the reimbursement of cost of extracting construction materials such as sand, stone/boulder, gravel, etc. from the river beds or quarries. Such prices will be levied by the local District Development Committee (DDC) as may be in force at the time. The Contractor, sub-contractor(s) employed directly by him and for whom he is responsible, will not be exempted from payment of royalties, taxes or other kinds of surcharges on these construction materials so extracted and paid for to the DDC.
86. Member of Government, etc., not Personally Liable	86.1 No member or officer of GoN or the Employer or the Project Manager or any of their respective employees shall be in any way personally bound or liable for the act or obligations of the Employer under the Contract or answerable for any default or omission in the observance or performance of any of act, matter or thing which are herein contained.
87. Approval of Use of Explosives	87.1No explosives of any kind shall be used by the Contractor without the prior consent of the Employer in writing and the Contractor shall provide, store and handle these and all other items of every kind whatsoever required for blasting operations, all at his own expense in a manner approved in writing by the Employer.
88. Compliance with Regulations for Explosives	88.1 The Contractor shall comply with all relevant ordinances, instructions and regulations which the Government, or other person or persons having due authority, may issue from time to time regarding the handling, transportation, storage and use of explosives.
89. Permission for Blasting	89.1 The Contractor shall at all times maintain full liaison with and inform well in advance, and obtain such permission as is required from all Government authorities, public bodies and private parties whatsoever concerned or affected, or likely to be concerned or affected by blasting operation.

90. Records of Explosives	90.1 Before the beginning of the Defects Liability Period, the Contractor shall account to the satisfaction of the Project Manager for all explosives brought on to the Site during the execution of the Contract and the Contractor shall remove all unused explosives from the Site on completion of works when ordered by the Project Manager.
91. Traffic Diversion	91.1 The Contractor shall include the necessary safety procedures regarding and pedestrian traffic diversion that is needed in execution of the works. The Contractor shall include in his costing of works, any temporary works or diversion that are needed during the construction period. All traffic diversion should be designed for the safety of both the motoring public and the men at work. It shall ensure the uninterrupted flow of traffic and minimum inconvenience to the public during the period concerned. As such, adequate warning signs, flagmen and other relevant safety precautionary measures shall be provided to warn motorists and pedestrians well ahead of the intended diversion as directed by the Project Manager. All traffic devices used shall be designed in accordance with the instruction of Project Manager.

SECTION - VIII
Special Conditions of Contract

The following Special Conditions of Contract shall supplement the GCC. Whenever there is a conflict, the provisions herein shall prevail over those in the GCC

Special Conditions of Contract

A. General	
GCC 1.1 (q)	The Employer is: **Nepal Electricity Authority** **Distribution and Consumer Services Directorate** **Butwal Regional office** **Kalikanagr, Butwal**
GCC 1.1 (u)	The Intended Completion Date for the whole of the Works shall be **18** months.
GCCs 1.1 (bb) & 10.1	The Project Manager is a person assigned by the employer.
GCC 1.1 (dd)	The Site is located at the areas of **Gulmi District.**
GCC 1.1 (hh)	The Start Date shall be: 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. **If the contractor fails to submit the Advance Payment Guarantee within 15 days of signing of Contract or does not require Advance Payment, the Contract shall be effective 15 days after the signing of Contract.**
GCC 1.1 (ll)	The Works consist of ***Supply, Delivery, Installation, Erection, Testing and Commissioning of Hadhade, Pipaldhara, Marbhung, Chhaphile, Jaisithok and other VDC Electrification, Gulmi*** **on** ***turnkey basis*** as specified in the Works Requirements, Section V and Bill of Quantities, of the Bidding Document..
GCC 1.1	***Add the following terms and definitions after 1.1 (ll).***

	The terms "Facilities" and "Works" are used interchangeably. The terms "Final Acceptance Certificate" and "Defect Liability Certificate" are used interchangeably. ***Add new definition as follows:*** (mm) Final Acceptance means the acceptance by the Employer of the facilities, which certifies the Contractor's fulfillment of the entire contract. The "Final Acceptance Certificate" shall be issued to the Contractor after the expiry of the last Defect Liability Period provided the Contractor has also fulfilled all its obligation towards the Income Tax Department and the Customs Department of Government of Nepal.
GCC 2.2	Sectional Completions are: **Not Applicable**
GCC 2.3(i)	The following documents also form part of the Contract: (a) Minutes of Meeting as agreed upon (b) Value Added Tax (VAT) Certificate (c) PAN Certificate (d) Tax clearance Certificate
GCC 3.1	The language of the contract is **ENGLISH/NEPALI** The law that applies to the Contract is the LAW OF NEPAL
GCC 13.1	Not Applicable
GCC 14.1	Schedule of other contractors: **None**

GCC 19.1

The minimum insurance covers shall be:

(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	Deductible Limits	Parties Insured	From	To
110% of CIP Cost	(*)	Contractor	Dispatch Certificate	Arrival to Site

(*) Excess 5% of claimed amount subjected to minimum of NRs. 20,000 for normal and NRs. 80,000 for act of God/major perils and collapse.

(b) Installation All Risk Insurance:

Covering physical loss or damage to the Facilities at the Site, occurring prior to completion of the Facilities, with 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 obligation during the defect liability period.

Amount	Deductible Limits	Parties Insured	From	To
110% of Contract Value	(*)	Contractor	Dispatch Certificate	Final Acceptance Value

(*) Excess 5% of claimed amount subjected to minimum of NRs. 10,000 for normal period and NRs. 30,000 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	Deductible Limits	Parties Insured	From	To
NRs. 1 Million	As in (b) above	Contractor's Employees	Commencement of Works	Defect Liability Certificate
NRs. 1 Million	As in (b) above	Employer's Personnel	Commencement of Works	Defect Liability Certificate
NRs. 4 Million	As in (b) above	Third Party Personnel	Commencement of Works	Defect Liability Certificate

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.

Worker's Compensation:

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

Employer's Liability:

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

Other Insurances:

The Contractor is also required to take out and maintain at its own cost the following insurances:

Details: None

Amount	Deductible Limits	Parties Insured	From	To

The Employer shall be named as co-insured under all insurance policies taken out by the Contractor except for the third party liability,Workers' Compensation and Employer's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insured's under all insurance policies taken out by the Contractor, except for the Cargo, Worker's Compensation and Employer's Liability

	Insurances. All insures's rights of subrogation against such co-insured's for losses or claims arising out of the performance of the Contract shall be waived under such policies. The minimum cover for personnel injury or death insurance shall, however, be not less than as per requirement of the Labor Act of Nepal.
GCC 20.1	Site Investigation Reports are: **None**
GCC 23.1	The following shall be designed by the Contractor: As applicable
GCC 26.1	The Site Possession Date(s) shall be: **As agreed during Contract signing**
GCC 30.1	The place of arbitration shall be: Kathmandu, Nepal.
C. Time Control	
GCC 34.1	The Contractor shall submit for approval a Program for the Works within 30 days from the date of the Letter of Acceptance.
GCC 34.3	The period between Program updates is **30 days**. The amount to be withheld for late submission of an updated Program is: **All due bills shall be withheld.**
GCC 35.3	Add this new Sub-Clause: If the Contractor intends to apply for an extension of the Time for Completion, the Contractor shall give notice to the Employer's Representative of such intention as soon as possible and in any event within 14 days of the start of the event giving rise to delay. Within 28 days of the start of the event giving rise to the delay, the Contractor shall submit full supporting details of his application.
D. Quality Control	

GCC 41.1	***Add following before Clause 41.1*** 1. The Employer or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract specifications at no extra cost to the Employer. Technical Specifications shall specify what inspections and tests the Employer requires and where they are to be conducted. The Employer shall notify the Contractor in writing, in a timely manner, of the identity of any representatives retained for these purposes. 2. The inspections and tests may be conducted on the premises of the Contractor of its subcontractor(s), at point of delivery, and/or at the Good's final destination. If conducted on the premises of the Contractor or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Employer. 3. Should any inspected or tested Goods fail to conform to the Specifications, the Employer may reject the Goods, and the Contractor shall either replace the rejected Goods or make alternations necessary to meet specification requirements free of cost to the Employer. 4. The Employer's right to inspect, test and, where necessary, reject the Goods after the Goods arrival in Nepal shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the Employer or its representative prior to the Goods shipment from the country of origin. 5. The Employer will depute his Engineers to witness the factory test at Contractor's factory. Number of personnel and items of equipment whose tests will be witnessed by NEA personnel shall be as follows. Travelling expenses, per diem, accommodation, living and all other expenses incurred by such personnel during their visit for shop inspection shall be bear by NEA. Poles: 2 person (1 lot) ACSR Conductors: 2 person (1 lot) Distribution Transformers: 2 person (1 lot) Insulators and Hardware: 2 person (1 lot) 6. Nothing in Clauses here above shall in any way release the Contractor from any warranty or other obligations under this Contract

GCC 42.1	The Defects Liability Period is: **365 days**
	E. Cost Control
GCC 46.7	***Add this new sub-clause:*** The quantities entered in the Price Schedule are only estimated quantities. After detailed site investigation and design, the Contractor shall prepare a final Price Schedule within 45 days from the date of Contract Signing and submit to the Project Manager for approval. The Contractor shall agree to make no claims to anticipated profit or alleged losses because of any difference between the quantities actually furnished and erected and the estimated quantities from Contract. NEA reserves the right at the time of award of contract or within three months from the effective date of contract to increase or decrease the quantities of the Price Schedule by up to fifteen percent (15%) of the contract price. Taking this into consideration, the Bidder shall present a fairly balanced price on Bill of Quantities.
GCC 49	***Delete sub-clause 49.1, 49.2 and 49.3 and replace with the following:*** **General** Payments of the plant and equipment offered from outside the Nepal shall be made in Nepalese Currency only and no Letter of Credit shall be established. Payments for insurance, clearing, forwarding and transportation up to site, locally manufactured equipment and construction and installations shall also be made only in local currency, i.e. in Nepali Rupees. ***Advance Payment:*** Up to 10% (Ten Percent) of total Contract price may be payable in first installments after agreement. i. Payments to the Contractor for progress payments shall be made by the NEA to the Contractor within reasonable time after receipt of invoices. ii. Payments to be made to the Contractor by the NEA other than progress payments shall be made in accordance with the relevant clauses governing each type of payment. iii. All payments to the Contractor for work performed under the Contract shall be in Nepalese Rupees in accordance with supply

and construction items unit prices pursuant to the Bid Price Schedules. Notwithstanding NEA procedural assistance to the Contractor, will neither make any foreign currency payments to the Contractor for any reason whatsoever nor guarantee any foreign currency commitment by the Contractor.

iv. Payments shall be made adhering to actual measurements at site strictly. For any variations in quantity the unit rate of the bid shall prevail. Measurement at site shall be jointly carried out by the representative/engineer of employer, contractor and community.

v. Progress Payment shall be made only after the completion of work under any construction unit complete as mentioned in BOQ as per standard drawing, specification and as directed by the **BRO/NEA**. Contractor shall not receive any amount against material delivered at sites until these materials are installed or erected at site. Further the progress Bill less than 15% of contract amount and more than fifth running bill shall not be processed for payment.

Retention Amount

Five percent (5%) from each progress payment for Plant and Materials; Insurance, Clearing, Forwarding and Inland Transportation to Site; and Construction and Installation works shall be retained. The following conditions shall be fulfilled for the payment of such retained amount:

(a) Issuance of Defect Liability Certificate by the Employer's Representative.
(b) Receipt of income tax clearance certificate by Government of Nepal (GON), Internal Revenue Department (IRD) and custom clearance documents showing the re-export of all the returnable items or tax payment Certificate for items disposed in the Country including fulfillment of all outstanding obligations. If the Contractor fails to clear all the required taxes, custom clearances and all outstanding obligations as mentioned above, such money shall be deducted from this portion of the Retention money.
(c) The Employer shall pay the Contractor the amounts certified by the Manager within 45 days from the date of approval of each certificate.

Income Tax Deduction

From each progressive bill, an amount, as determined by the prevalent rules and

	regulation of GOVERNMENT OF NEPAL, shall be deducted and deposited with the concerned Tax Department in the country as a deposit towards Contractor's income tax.
GCC 51	***Delete sub-clause 51.1 and replace with the following:*** **1. In the country of Origin** The prices bid by the Contractor shall include all taxes, duties and other charges imposed outside the Employer's country on the production, manufacture, seller and transport of the Contractor's Equipment, Plant, Materials and supplied to be used on or furnished under the Contract, and on the services performed under the Contract. **2. In Nepal** **General:** (a) 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 that may be levied in accordance with the laws and regulations in force or in effect in Nepal as of 28 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 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. (b) **Value Added Tax (VAT):** value added tax (VAT) shall be imposed on all imported equipment and materials to be supplied and delivered exclusively for use in the Project. The prices bid by the Contractor and its suppliers and subcontractors shall include the VAT as specified on Price Schedule. (c) In the event that the origin of any of the contractor's or its subcontractor's or the nominated subcontractor's plant, equipment and materials is India, the provisions for the exemption of customs duties as is mentioned in this clause shall be applied only under the following conditions. Failure to comply with these conditions will result in application of normal customs duties, as per prevailing rules and

	regulation of Government of Nepal (GON). **Staff Income Tax:** The Contractor's staff, personnel and laborers, and those of its subcontractors, will be liable to pay personal income tax in the Employer's country, irrespective of whether they are local or foreign nationals on income earned including salaries and wages as applicable under the laws and regulation 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. **Duties on Equipment, Plant, Materials and Supplies:** (a) The Contractor shall pay all applicable customs & taxes and shall be included in the Contract Rates and Prices. (b) Income tax assessed in accordance with the prevailing Income Tax Act of Nepal and as per the provision of any specific Double Taxation Agreement, shall be imposed on the Contractor, its sub-contractors and nominated sub- contractors. An advance income tax as per the prevailing income Tax Act and Finance Act shall be deducted from the monthly progress payment of the Contractor. (c) The Contractor shall pay all duties, taxes, fees and contributions levied in Nepal in Nepalese Rupees as directed by the relevant governmental department or office, or any other local statutory agency or body in accordance with the relevant rules and regulations. (d) Other local fees and charges (toll taxes) shall be applied in accordance with the prevailing laws and regulations of Nepal. (e) The Contractor shall pay all applicable customs & taxes and shall be included in the Contract Rates and Prices. (f) Locally available goods, construction materials including fuel, lubricating oil, cement, timber, iron and steel goods, etc. shall be procured locally. All taxes for such goods procured from the local market shall be included in the Contract Rates and Prices and no reimbursement or payment in that respect shall be made to the Contractor.
GCC 53.1	***Delete sub-clause 53.1, 53.2 & 53.3 and replace with the following:*** This is Fixed Price Contract.

GCC 53.6	***Delete sub-clause 53.6 and replace with the following:*** This is Fixed Price Contract.
GCC 53.7	***Delete sub-clause 53.7 and replace with the following:*** This is Fixed Price Contract.
GCC 54.1	The proportion of payments retained is: **5 (FIVE) PERCENT**
GCC 55.1	The liquidated damages for the whole of the Works are 0.05 PERCENT of the final Contract Price per day. The maximum amount of liquidated damages for the whole of the Works is 10 PERCENT of the final Contract Price.
GCC 56.1	The Bonus for the whole of the Works is **Not Applicable.**
GCC 57.1	The Advance Payments shall be limited to Ten Percent (10%) payable in First installments, of the initial Contract price excluding the provisional sums, day works and VAT and shall be made to the Contractor upon submission of acceptable Bank Guarantee for advance payment.
GCC 57.3	Deductions from Payment Certificates will commence in the first certificate in which the value of works executed exceeds 30% of the Contract Price. Deduction will be at the rate of 15% of the respective Monthly Interim Payment Certificate until such time as the advance payment has been repaid; provided that the advance payment shall be completely repaid prior to the end of 80 % of the approved contract period.
GCC 58.1	i) The Performance Security shall be for the following minimum amounts equivalent as a percentage of the Contract Price: ***5 percent*** and an ***additional amount of 8%*** of the Contract price if the Employer has increased the Performance Security amount pursuant to ITB Sub Clause 10.1. or ii) If contract price is below 15% of estimated amount then performance security shall be 5 percent of contract price and an addition 50% amount of difference between 15% of estimated amount and contract price, i.e. Performance Security Amount = [(0.85 x Cost Estimate –Bid Price) x 0.5] + 5% of Bid Price or iii) The Performance Security shall be for the following minimum amounts

	equivalent as a percentage of the Contract Price: amount in clause ii and an additional amount of 8% of the Contract price if the Employer has increased the Performance Security amount to ITB Sub Clause 40.1. The Standard form(s) of Performance Security acceptable to the Employer shall be "an Unconditional Bank Guarantee" acceptable to the Employer of the type presented in section X of the Bidding Documents. The Performance security shall be valid for a period of ninety (90) days beyond the expiration of warranty period and will be discharged by the purchaser and returned to the supplier not later than thirty (30) days following the date of completion of the supplier's performance obligations under the contract including any warranty obligations and submission to purchaser by the supplier of Income Tax clearance certificate issued by the concerned GON office. The supplier shall promptly extend the validity suitably to cover agreed extension of the warranty period of the supplied goods.
G. Finishing the Contract	
GCC 68.1	***Replace the whole clause with the following:*** The Contractor shall request the Project Manager to issue a certificate of Completion of the Works, after completion of the Works in accordance with the Contract, including Tests on Completion. A pre-requisite for such request is that the entire Work has been subjected to normal operating stresses for at least two (2) weeks and that no defects or elements of danger have developed during this period (except for minor outstanding work that does not affect the use of the Works or Section for their intended purpose). The Employer's right to subject part of the Work to normal operating stresses during the course of execution is not affected by the provisions of this article. When the Employer/Employer's Representative along with CBOare satisfied that the whole Works have been completed and has established that the individual components are impeccable in all respects and fulfill the stipulated conditions, and after any defects that may have come to light have been remedied, a Hand-Over Certificate will be issued by the Employer's Representative along with CBO with copy to the Employer. The right to determine whether or not the whole Work is completed rests with the Employer/Employer's Representative. The issuance of the Hand-Over Certificate marks the beginning of the Defect Liability Period. The Employer can reject the application, giving his reason and specifying the

	work required to be done by the Contractor to enable the Hand-Over Certificate to be issued: the Contractor shall then complete such work before issuing a further notice under this Sub-Clause.
GCC 71.1	The date by which operating and maintenance manuals are required is: Prior to the issuance of the Certificate of Completion. Moreover, should any change is required in the "as-built" drawings because of rectification of any defects within the Defects Liability Period, such changes shall be incorporated and "as-built" drawing shall be updated accordingly before issuance of the Final Acceptance Certificate.
GCC 71.2	The dates by which "as built" drawings are required is: Prior to Completion Certificate. The amount to be withheld for failing to produce "as built" drawings and/or Operating and Maintenance manuals by the date required is: Full value of last invoice.
GCC 72.3 (i)	The maximum number of days is: 200 days
GCC 75.1	The percentage to apply to the value of the work not completed, representing the Employer's additional cost for completing the Works, is: 25%
GCC 80	The Project Manager has to obtain the specific approval of the Employer for taking any of the following actions: a. Approving subcontracting of any part of the work under General Conditions of Contract Clause 13; b. Certifying additional costs determined under General Conditions of Contract Clause 50; c. Determining start date under General Conditions of Contract Clause 1; d. Determining the extension of the intended Completion Date under General Conditions of Contract Clause 35; e. Issuing a Variation under General Conditions of Contract Clause 1 and 46, except in an emergency situation, as reasonably determined by the Manager; emergency situation may be defined as the situation when protective measures must be taken for the safety of life or of the works or of adjoining property. f. There shall be no changes in unit rates quoted by the contractor pursuant to clause 45 of General Conditions of Contract.

Add the Clause 80 in GCC with the following Sub Clauses:

80.1 Inspection and Tests

(A) General

The quality, workmanship and performance of all items and the Works or Equipment (raw materials, components, intermediate assemblies and end products) shall be subject to inspections and tests by the Employer/Employer's Representative to the extent practicable, at the relevant locations and in any event prior to Taking Over. Unless otherwise directed, testing and inspection shall be done according to the best commercial method for the particular type and class of work.

The Employer/Employer's Representative shall be entitled at all reasonable times before and during the periods of design, manufacture, shipment, site erection, commissioning and guarantee period to inspect, examine and test the design work, materials and workmanship of all work and equipment to be supplied under the Contract, and if part of the Work or equipment is being manufactured on other premises, the Contractor shall obtain for the Employer/Employer's representative permission to inspect, examine and test as if the said Works or equipment were being manufactured on the Contractor's premises. The inspection, examination or testing, if made, shall not release the Contractor from any responsibility and obligation under the Contract. Work and equipment not manufactured or erected in accordance with the Contract shall be removed by the Contractor at his own expense.

Inspectors and other properly authorized representatives of the Employer/Employer's Representative shall be free at all times to perform their duties and any intimidation or attempted intimidation of any one of them by the Contractor or by any of his employees or Sub-Contractor shall be sufficient reason, if the Employer so decides, for the termination of Contract.

The Contractor shall furnish all reasonable aid and assistance required by the Employer/Employer's Representative, or inspectors, for the proper inspection and examination of the Work and all parts thereof. For tests on the premises of the Contractor or of any Sub-Contractor or at Site (unless otherwise stated in the Specifications), the

Contractor shall provide at his expense such as means of access, space, vehicles, machine, labor, materials, electricity, fuel, stores, apparatus and instruments, as well as make availability the use of all Contractor's facilities as may be required and as may be demanded reasonably to perform these tests efficiently.

The Contractor shall analyze and test all materials and equipment, which the Employer/Employer's Representative requires to be analyzed or tested. Selection of samples for testing material or equipment shall be made by the Employer/Employer's Representative. The Contractor shall analyze and test these materials and equipment in the manner and at the time and place stated in the Contract Documents or required by the Employer/Employer's Representative in accordance with the provisions of the Contract.

Under completion of manufacture at the factory, the Employer will depute his personnel to the Contractor's factory to witness the fabrication, assembly and testing of any or all parts of the equipment and materials as specified in Sub-Clause 41.1 of SCC.

Unless waived in writing by the Employer/Employer's Representative or unless otherwise stated in Specifications, all inspections and tests shall be made in the presence of the Employer / Engineer or inspector authorized by the Employer. Only those materials and parts of the Work and equipment, which have been approved by the Employer/Engineer shall be used and shipped.

(B) Cost of tests borne by the Contractor

Unless otherwise specified, all costs related to the fabrication, assembly and test or tests shall be arranged and borne by the Contractor at its own cost. This shall apply to tests performed at the Site or elsewhere.

(C) Dates for inspection and testing

The Contractor shall agree with the Employer/Employer's Representative the date on and the place at which any Work will be ready for testing as provided in the Contract and if the Employer/Employer's Representative fails to attend at the place so named on the date agreed the Contractor may proceed with the tests, which shall be deemed to have been made in the Employer/Employer's Representative presence, and shall forthwith forward to the Employer/Engineer duly certified copies of the test

readings.

(D) Facilities for testing

Where the Contractor provides for tests on the premises of the Contractor or of any Sub-Contractor the Contractor shall provide such assistance, labor, materials, electricity, fuel, stores, apparatus and instruments as may be requisite and as may be reasonably demanded to carry out such tests efficiently.

(E) Rejection

If as a result of such inspection, examination or test of the Work the Employer/Employer's Representative shall decide that such Work is defective or not in accordance with the Contract he shall notify the Contractor accordingly stating in writing his objection and reasons therefore, the Contractor shall with all speed make good the defect free or ensure that the Work complies with the Contract.

Thereafter, if required by the Employer/Employer's Representative, the tests shall be repeated under the same terms and conditions and all expenses borne by the Contractor.

All costs incurred by the Employer by the repetition of the tests or false calls shall borne by the Contractor. Any delay in delivery due to retest or false call shall not constitute a release of the Contractor for his responsibilities for delay.

(F) Commissioning

Commissioning shall be defined as those parts of the tests on completion which include the trial runs and operational tests to be carried out in order to put equipment into service under real operating conditions. Commissioning shall take place in accordance with instructions of the manufacturers of the relevant parts of equipment.

64.2 Inspection and Test at Factory

Whenever the Contractor is ready to carry out any such test and inspection, it shall give reasonable advance notice, including the place and time, to the Employer. The Contractor shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Employer or its designated representative to attend the test / or inspection. Upon Contractor's such notification, the Employer shall notify the Contractor in writing of the identity of any representatives retained for these purposes. The testing inspection expenses of employers

	bear by the NEA, including travelling, lodging and food. Inspection Schedule shall be finalized during Contract Negotiation. Following plant, equipment and material shall be witnessed and tested by the Employer's representatives at the manufacturer's factory before dispatching it to the Site. Poles ACSR Conductor Distribution Transformer Insulator and Hardware

SECTION - IX

Contract Forms

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.

Table of Forms

1) Letter of Intent…….....X-2
2) Letter Of Acceptance……..X-3
3) Contract Agreement……...X-4
4) List of Approved Subcontractors……X-5
5) Performance Security….....X-6
6) Advance payment Security……..…X-7

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 regardsto 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.]

Letter of Acceptance

[on letterhead paper of the Employer]

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 Nepalese Rupees [insert amount in figures and words in Nepalese Rupees], as corrected in accordance with the Instructions to Bidders is hereby accepted in accordance with the Instruction to Bidders.

You are hereby instructed to contact this office to sign the formal contract agreement within 15 days with Performance Security as specified in the SCC consisting of a Bank Guarantee in the format included in Section IX (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: ……

Contract Agreement

THIS AGREEMENT made the .....day of …….. between……. name of the Employer …….. (hereinafter "the Employer"), of the one part, and ……name of the Contractor ……(hereinafter "the Contractor"), of the other part:

WHEREAS the Employer desires that the Works known as …….... name of the Contract .....should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects in the sum of NRs ….....…..[insert amount of contract price in words and figures including taxes] (hereinafter "the Contract Price").

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement.
   (a) the Letter of Acceptance;
   (b) the Letter of Bid;
   (c) the Addenda Nos. ..... insert addenda numbers if any ……
   (d) the Special Conditions of Contract;
   (e) the General Conditions of Contract;
   (f) Bills of Quantities (BOQ);
   (g) the Specification;
   (h) the Drawings;
   (i) the Activity Schedules; and
   (j) [Specify if there are any other document]
3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

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 the Contractor in the presence of	Signed by…….. for and on behalf of the Employer in the presence of
Witness, Name Signature, Address, Date	Witness, Name, Signature, Address, Date

List of Approved Subcontractors

In accordance with GCC Sub-Clause 13.1, The following Subcontractors are approved for carrying out the work as specified below.

Name of Subcontractors	Description of Works	Value/Percentage of subcontract

Performance Security

(On letterhead paper of the 'A' class commercial Bank)

..... 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 ... ... [insert name of the Contractor] (hereinafter called "the Contractor") has been notified by you to sign the Contract No. .. .. [insert reference number of the Contract] for the execution of ... .. [insert 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 guaranteeis required.At the request of the Contractor, we ... . [insert name of the Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ..... [insert name of the currency and amount in figures*] (... .. insert 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 date specified for the Defect Liability 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 presentedtothe Guarantor before the expiry of the guarantee".

Advance Payment Security

(On letterhead paper of the 'A' class commercial Bank)

..... 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.

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".