

ASSAM POWER DISTRIBUTION COMPANY LTD.

BID DOCUMENT

FOR

Reconductoring of 33 KV Line from 132/33 KV Domoni (Matia) Grid Sub Station to 33/11 KV Damra Sub Station from existing AAAC Raccon Conductor to ACSR Wolf Conductor (Line Length: 20 Km) under Dudhnoi ESD within the jurisdiction of Bongaigaon Electrical Circle, APDCL under SOPD 2022-23 Scheme”.

ON

“TURNKEY” MODE



SCHEME: SOPD 2022-23

**NIT NO. CGM (PP&D)/APDCL/SOPD 2022-23 (SDN)/Domoni (Matia) - Damra 33KV
Line/08 Dtd: 26-08-2022**

ASSAM POWER DISTRIBUTION COMPANY LIMITED (APDCL)
O/o Chief General Manager (PP&D), BijuleeBhawan, Paltanbazar, Guwahati-
781001

NOTICE INVITING TENDER

NIT No. CGM (PP&D)/APDCL/SOPD 2022-23 (SDN)/Domoni (Matia) - Damra 33KV Line/08 Dtd: 26-08-2022

E-tenders, with validity up to 180 (One Hundred Eighty) days from the last date of bid submission, are hereby invited by the undersigned for:

1. Reconductoring of 33 Domoni-Damra KV Line from 132/33 KV Domoni (Matia) Grid Sub Station to 33/11 KV Damra Sub Station from existing AAAC Raccon Conductor to ACSR Wolf Conductor (Line Length: 20 cKm) under Dudhnoi ESD within the jurisdiction of Bongaigaon Electrical Circle, APDCL under SOPD 2022-23 Scheme”.

The complete tender documents can be downloaded from our official website www.apdcl.org and also from <https://assamtenders.gov.in>. Bidders can download the Bidding Documents and commence preparation of bids to gain time. Download of bidding document is free of cost. However, bidders must deposit online non-refundable tender processing fee of **Rs. 5,000.00 (Rupees Five Thousand) only** while online submission of tenders in <https://assamtenders.gov.in>.

All parties are requested to understand this BID DOCUMENT in detail in order to comply with APDCL's requirements including but not limited to the fees and deadlines, eligibility criteria, selection methodology, scope of work, and minimum technical standards.

The earnest money for the work is **Rs. 5,50,000.00 (Rupees Five Lakhs Fifty Thousand) only**. EMD shall be deposited online at the time of submission of tender in <https://assamtenders.gov.in>. Any tender without EMD will be rejected outright.

Key Dates:

a)	Tender publishing and download start date & time:	31.08.2022	10:00 Hours
b)	Last date for submitting Pre-bid queries	06.09.2022	10:00 Hours
c)	Pre-Bid meeting date and time:	06.09.2022	12:00 Hours
d)	Bid submission start date and time:	09.09.2022	10:00 Hours
e)	Last date and time of Bid Submission:	15.09.2022	17:00 Hours
f)	Date & time of opening of Technical bid:	16.09.2022	14:00 Hours

The Company reserves the right to accept or reject any tender in part or in full or cancel/withdraw the Notice Inviting Tender without assigning any reason thereof whatsoever and in such case, no bidders/intending bidders shall have any claim arising out of such action.

For details, please visit www.apdcl.org and <https://assamtenders.gov.in>

Chief General Manager (PP&D), APDCL

CONTENTS

SL No	Item	Page No
1	Section I: Invitation for Bid (IFB)	2-4
2	Section II: Instruction to Bidders (ITB)	5-22
3	Section III: Qualifying Criteria and Document Checklist	23-28
4	Section IV: Scope of Work & BOQ of materials	29-33
5	Section V: General Conditions of Contract (GCC)	34-52
6	Section VI: Technical Specifications	53-176
7	<p style="text-align: center;">Section VII: Forms of Bid</p> <p>Annexure-1 : Format for sending query to APDCL</p> <p>Annexure-2 : Format for Covering letter by the Single Bidder/Lead Partner of the Joint Venture for submission of bid</p> <p>Annexure-3 : Format for Joint Venture Agreement</p> <p>Annexure-4 : Format for Power of attorney from each partner of the Joint Venture in favour of the Lead Partner.</p> <p>Annexure-5 : Proforma of Bank Guarantee for Contract Performance</p> <p>Annexure-6 : Proforma of Extension of Bank Guarantee</p> <p>Annexure-7 : Proforma of Contract Agreement</p> <p>Annexure-8 : Format for submission of List of Ongoing and Completed Projects in 1) APDCL & other successor Companies of ASEB and 2) Outside the State of Assam.</p> <p>Annexure-9 : Format for summary of audited financial statements distinctly indicating the revenue heads and turnover for the last 3(three) consecutive financial years for each partner of the Joint Venture</p> <p>Annexure -10 : Format for submission of information regarding Bid Capacity.</p> <p>Annexure-11 : Format for certificate of Skilled Technical Manpower</p>	177-199

SECTION – I
INVITATION FOR BIDS
(IFB)

**ASSAM POWER DISTRIBUTION CO. LTD.
PROJECT PLANNING & DESIGN**

NIT No. CGM (PP&D)/APDCL/SOPD 2022-23 (SDN)/Domoni (Matia) - Damra 33KV Line/08 Dtd: 26-08-2022

Name of the Work:-

1. Reconductoring of 33 KV Domoni-Damra Line from 132/33 KV Domoni (Matia) Grid Sub Station to 33/11 KV Damra Sub Station from existing AAAC Raccon Conductor to ACSR Wolf Conductor (Line Length: 20 cKm) under Dudhnoi ESD within the jurisdiction of Bongaigaon Electrical Circle, APDCL under SOPD 2022-23 Scheme”.

IMPORTANT INFORMATION

SL No.	Event	Information to the Bidders	
1	Tender publishing and download start date & time:	31.08.2022	10:00 Hours
2	Last date for submitting Pre-bid queries	06.09.2022	10:00 Hours
3	Pre-Bid meeting date and time:	06.09.2022	12:00 Hours
4	Bid submission start date and time:	09.09.2022	10:00 Hours
5	Last date and time of Bid Submission:	15.09.2022	17:00 Hours
6	Date & time of opening of Technical bid	16.09.2022	14:00 Hours
7	Date & time of opening of Financial bid	To be intimated later	
8	Pre-Bid Meeting Address	Venue: O/o the Chief General Manager (PP&D), APDCL 6 th floor, BijuleeBhawan, Paltanbazar, Guwahati-781001	
9	Tender Document	The complete Tender Documents can be downloaded free of cost from the APDCL's website www.apdcl.org , as well as E-tendering portal of GoA www.assamtenders.gov.in	
10	Estimated Cost of the Project	Rs.2,61,15,886.00 (Rupees Two Crore Sixty One Lakhs Fifteen Thousand Eight Hundred Eighty Six only)	
11	Tender Processing Fees	Rs. 5,000/- (Rupees Five Thousand only). The Bidder must deposit non-refundable tender processing fees for the aforesaid amount through online mode at the time of submission of the E-tender. For further details regarding online payment of the tender processing fees, the online published tender documents may be referred.	
12	Bid Security/EMD	Rs. 5,50,000.00 (Rupees Five Lakh Fifty Thousand) only The EMD must be submitted through online mode at the time of submission of the E-tender. Any tender without EMD will be rejected outright. For further details regarding online payment of the EMD, the online published tender documents may be referred.	
13	Address & contact details for future correspondences in this regard	O/o the Chief General Manager (PP&D), APDCL 6 th floor, BijuleeBhawan, Paltanbazar, Guwahati-781001. Email ID: cgm.ppd@apdcl.org	

1. **Source of Fund: "SOPD 2022-23" Scheme.**
2. **Tender Processing fees & EMD:** As delineated above. The tender processing fees and EMD shall be deposited through online mode as per the provision explained above.
3. **Bid Validity:** The bid shall remain valid for a period of 180 days from the last date of bid submission. However, in exceptional circumstance, APDCL may solicit the Bidder's consent to an extension of the bid validity period. The request and responses thereto shall be made in writing or by Email.
4. The completion period for the Contract shall be the period as specified in Section V: GCC Sub-Clause 3.1.
5. The bidding will be conducted through the open competitive bidding procedures as per the provisions specified in the Bid. A Single Stage Two Envelope E-tendering Procedure to be adopted to carry out the tendering formalities against this tender in pursuant to Clause No. 4.1 under Section : ITB.
6. Bids must be submitted electronically through E-tender portal www.assamtenders.gov.in in two parts as Techno Commercial bid and Price bid. A copy of the Technical bid shall be submitted in a sealed envelope super scribing (a) Tender No. (b) Name of the bidder with full address. The submitted hardcopies shall be used for preservation purpose only. **Submission of Techno-commercial Bid in hard/paper form shall not be considered for evaluation purpose. Further, any document not found in the online uploaded copy, but furnished as a part of offline/hardcopy submission shall not be considered for evaluation purpose. Hence, the intending Bidders are advised to upload their techno-commercial bids carefully and completely.**
7. The detailed Qualifying Requirements (QR) are specified in the **Section IV: "Qualifying Criteria & Document Checklist"** of the Bidding Document.
8. Only those bidders found responsive in Part-I of Bid viz. Techno Commercial bid with adequate bid capacity shall be considered for opening of Price Bid. The date and time of opening of Part-II Bid (Price) shall be communicated to those bidders whose bids are qualified for opening.
9. The issue of this BID DOCUMENT does not imply that APDCL is bound to select a Bidder for the Project. APDCL reserves the right to cancel/withdraw this invitation for bids without assigning any reason and shall bear no liability whatsoever consequent upon such a decision.

----- End of Section-I (IFB) -----

SECTION – II
INSTRUCTION TO BIDDERS
(ITB)

Table of Contents

1.0	Introduction	
1.1	Preamble-----	07
1.2	General Instructions-----	07
1.3	General terms for Bidding-----	07
1.4	Eligibility of Bidder-----	08
1.5	Cost of Bidding-----	09
1.6	Payment of fees by Bidders-----	10
1.7	Bidders to inform itself fully-----	10
1.8	Study of APDCL's existing system-----	10
2.0	The Bidding Document	
2.1	Contents of Bidding Document-----	11
2.2	Clarifications on Bidding Document-----	11
2.3	Pre-bid Meeting-----	12
2.4	Amendments to Bidding Documents-----	12
3.0	Preparation of Bids	
3.1	Language of Bid-----	13
3.2	Documents comprising the Bid-----	13
3.3	Bid Forms-----	13
3.4	Bid Prices-----	13
3.5	Bid Currencies-----	13
3.6	Bid Security/Earnest Money Deposit (EMD)-----	14
3.7	Validity of the Bid-----	14
4.0	Submission of Bids	
4.1	Method for submission of Bid-----	15
4.2	Deadline for submission of Bids-----	15
4.3	Late Bids-----	15
4.4	Modification and withdrawal of Bids-----	15
5.0	Bid Opening and Evaluation	
5.1	Opening of Techno-Commercial Bid-----	16
5.2	Confidentiality-----	16
5.3	Clarification on Bids-----	16
5.4	Responsiveness of Technical Bid-----	16
5.5	Non-conformities, Errors and Omissions-----	17
5.6	Evaluation of Techno-Commercial Part-----	18
5.7	Opening of Financial Bid-----	18
5.8	Evaluation of Financial Bid-----	18
5.9	Abnormally Low Bids (ALBs)-----	18
5.10	Overall Techno-Commercial Evaluation-----	19
5.11	Purchase/Domestic preference-----	19
5.12	Employers' Right to Accept any bid, and Reject any or All bids-----	20
6.0	Award of Contract	
6.1	Award Criteria-----	20
6.2	Notification on Award-----	20
6.3	Performance Security-----	20
6.4	Additional Performance Security in case of ALBs-----	21
6.5	Signing the Contract Agreement-----	21
6.6	Fraudulent Practices and Corruption-----	22

1. INTRODUCTION

1.1 Preamble

This section of the bidding document provides the information necessary for bidders to prepare responsive bids, in accordance with the requirements of APDCL. It also provides information on bid submission, opening and, on contract award.

Further in all matters arising out of the provisions of this Bid or of the Bidding Documents, the laws of the Union of India shall be the governing laws and Hon'ble Gauhati High Court at Guwahati shall have exclusive jurisdiction.

1.2 General Instructions

1.2.1 All Bidders shall comply with the dates and amounts indicated in "**Section I: Invitation for Bid (IFB)**" of the BIDDOCUMENT.

1.2.2 All Bidders must be required to meet the Eligibility Criteria stipulated in Clause 1.4 under this Section of the BIDDOCUMENT.

1.2.3 The Bidders shall comply with and agree to all the provisions of this existing Section II of the BID DOCUMENT for various bidding considerations including but not limited to eligibility, costs, payments, information regarding APDCL systems, bid formats, bid submission and other considerations.

1.2.4 The Bidders shall be evaluated based on the norms and procedures laid out in Section III of this BIDDOCUMENT.

1.2.5 The Bidders shall be required to undertake and bid for the scope of work for the Project indicated in Section IV of this BIDDOCUMENT.

1.2.6 The Bidders shall comply with various terms and conditions provided in this BID DOCUMENT including but not limited to those provided in Section V of this BID DOCUMENT.

1.2.7 The Bidders are 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.

1.3 General Terms for Bidding

1.3.1 The Bidders who wish to participate in online tenders will have to procure/shall have legally valid digital certificate as per Information Technology Act'2000 using which they can sign their electronic bids. Bidders who already have a Digital Certificate need not procure a new Digital Certificate.

1.3.2 All bids must be digitally signed. **In view of participation through Joint Venture mode, the E-bids must be digitally signed by the lead partner.**

1.3.3 Bids prepared by the Bidders and all correspondence and documents relating to the Bid exchanged by the Bidder and APDCL and its associates shall be written in the English language. Any printed literature furnished by the Bidder may be written in another language, provided that this literature is accompanied by an English translation, in which case, for purposes of interpretation of the Bid, the English translation shall govern.

- 1.3.4 If for any reason the Bid of any selected bidder is rejected or Letter of Intent issued to such selected bidder is rescinded, APDCL is empowered to take decisions for any of the following:
- i) Consider the next Lowest Evaluated Bid from qualifying Bidders; or
 - ii) Annul the entire bid process; or
 - iii) Take any such measure as may be deemed fit in the sole discretion of APDCL, as applicable.
- Decision of APDCL will be final and binding on all.
- 1.3.5 Technical bid submitted by the Bidders before the Bid Submission Deadline, shall become the property of the APDCL and shall not be returned to the Bidders.
- 1.3.6 APDCL may, at its sole discretion, ask for additional information/document and/ or seek clarifications from a Bidder after the Bid Submission Deadline, inter alia, for the purposes of removal of inconsistencies or infirmities in its Bid. However, no change in the substance of the Financial Bid shall be sought or permitted by APDCL.
- 1.3.7 APDCL may verify Bidder's technical and financial data by checking with Bidder's clients/ lenders/ bankers/ financing institutions/ any other person, as necessary.
- 1.3.8 The Bidders shall satisfy themselves, on receipt of the Bid Document, that the Bid Document is complete in all respects. Intimation of any discrepancy shall be given to the Tender Inviting Authority (TIA) for this Bid Document immediately. If no intimation is received from any Bidders on or before the date and time of the pre-bid meeting as notified in the Section I, then it shall be considered that the issued document, complete in all respects, has been received by the Bidder.
- 1.3.9 The Bid Document includes statements, which reflect the various assumptions arrived at by APDCL in order to give a reflection of the current status in the Bid Document. These assumptions may not be entirely relied upon by the Bidders in making their own assessments. The Bid Document does not purport to contain all the information each Bidder may require and may not be appropriate for all persons. Each Bidder should conduct its own investigations and analysis and should check the accuracy, reliability and completeness of the information in the Bid Document and obtain independent advice from appropriate sources.
- 1.3.10 All bank related documents must be submitted only from a Scheduled Bank as notified by the Reserve Bank of India (RBI).

1.4 Eligibility of Bidder

- 1.4.1 This Invitation for Bids, issued by APDCL is open to all firms (fulfilling the qualifying criterion mentioned herein) which can be a legal entity in the form of sole Indian proprietorship, a partnership firm set up under Indian Partnership Act, 1932, HUF, company registered under the Indian Companies Act, 1956 or a Limited Liability Partnership (LLP) registered under the Indian LLP Act, 2008, barring those bidders with whom business is banned by the APDCL.
- 1.4.2 The Bidder must not be debarred by any Procuring Entity under the State Government, the Central Government, Autonomous body, Authority by whatever name called under them.
- 1.4.3 Bids may be submitted by qualified individual firm or Joint Venture as given below:

- a) A single firm that on its own meets all the qualifying criteria as mentioned in the sub-Section: “**Technical Requirements**” and “**Financial Requirements**” under **Section III: Qualifying Criteria and Document Checklist** of this Bidding Document.
- b) A Joint Venture (JV) can be defined as legal association of two or more firms provided that one of the members of the joint venture shall be nominated as being partner in-charge (i.e. the “Lead partner”) and this authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all the members. Hence, the Joint Venture shall be represented to APDCL by the Lead partner.
- c) The Lead Partner shall be authorized to incur liabilities and receive instructions for and on behalf of any/all partners of the Joint Venture, and the entire execution of the contract, including payment, shall be done exclusively with the lead partner, provided otherwise requested by the Joint Venture in writing and agreed between APDCL and the Lead Partner.
- d) The Bidders, directly or indirectly shall not be a dependent agency of APDCL.
- e) The Bidder shall be wholly responsible for execution of the contract.
- f) In case of non-performance (slippage in milestones, scope & quality of work, discipline, etc. as assessed by APDCL) and/or bankruptcy of any of the partners, the lead bidder shall take necessary remedial action through addition/change of partner for the concerned role. The addition/change of partner for concerned role shall be with necessary prior approval of APDCL and shall be at no additional cost to the already agreed after of bidding for the project, failing which the next progressive payment, if applicable, will be held up. The addition/change of partner for concerned role shall be required to meet the Qualifying Criteria as detailed in the Qualifying Criteria and Document Checklist section.
- g) Sole bidder or any partners including lead partner (in case of Joint Venture) is not allowed to bid as partner of other bidders for the same bid. This will result in the disqualification of all Bids in which it is involved.
- h) Bidders willing to take part in the process of E-tendering are required to obtain Digital Signature Certificate (DSC) in the name of person who will sign the tender, from any authorized Certifying Authority (CA) under O/o the Controller of Certifying Authorities (CCA), Govt. of India. DSC is given as a USB e-Token.
- i) Any bidder willing to take part in the bidding process will have to be enrolled & registered with the Assam Government e-Procurement System (Tenders Assam portal, <https://www.assamtenders.gov.in>).

1.5 Cost of Bidding

The Bidder shall bear all costs associated with the preparation and submission of its bid including post-bid discussions, technical and other presentations etc., and the APDCL will in

no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

1.6 Payment of Fees by Bidders

- 1.6.1 Tender processing fees and EMD shall be paid online during submission of bid via <https://www.assamtenders.gov.in>. A schematic guideline for the same has been provided along with the tender documents for reference of the bidders.
- 1.6.2 Any Bid **not** accompanied by a substantially responsive EMD shall be rejected by APDCL as non-responsive.
- 1.6.3 The cost of all stamp duties payable for executing the Bid Documents or Project shall be borne by the relevant Lead Partner.
- 1.6.4 No interest shall be paid to the Bidder on any amount submitted to APDCL, whether to be returned or not.
- 1.6.5 Deposition of Fees by the bidders as tender processing fees or EMD may be subject to any procedural changes in the bidding portal. In case of any such developments, the same will be communicated by APDCL in the bidding portal as well as APDCL website.

1.7 Bidders to inform itself fully

- 1.7.1 The Bidder shall make independent enquiry and satisfy itself with respect to all the required information, inputs, conditions (including site conditions) and circumstances and factors that may have any effect on its Bid. Once the Bidder has submitted the Bid, the Bidder shall be deemed to have examined the laws and regulations in force in India, the grid conditions, and fixed its price taking into account all such relevant conditions and also the risks, contingencies and other circumstances which may influence or affect the supply of power. Accordingly, the Bidder acknowledges that, on being selected as Successful Bidder, it shall not be relieved from any of its obligations under the Bid Document nor shall be entitled to any extension of time for commencement of supply or financial compensation for any reason whatsoever.
- 1.7.2 The Bidders shall particularly acquaint themselves with the technical requirements of APDCL's systems, operations, assets, equipment, statutory codes and standards.
- 1.7.3 The Bidder shall familiarize itself with the procedures and time frames required to obtain all Consents, Clearances and Permits required for implementation of the Project. APDCL shall have no liability to obtain any of the Consents, Clearances and Permits required for setting up the Project other than those covered under APDCL's conventional business.

1.8 Study of APDCL's existing system

- 1.8.1 APDCL shall, if required, share certain information for the benefit of the prospective Bidders. The intention of sharing the data by APDCL is to share information about its

existing resources to provide a tentative idea of the existing systems at APDCL only to provide a perspective of the Scope of Work.

- 1.8.2 The intending bidders are requested to physically survey/inspect the location or route and get themselves understood the scope of work by having discussion with the concerned field officials in order to reduce post Contract award contingencies. The requirement of any additional work/quantity for fulfilling the scope of work under the project but inadvertently left out in the BOQ may be intimated in the pre-bid meeting only. The cost of visiting the site shall be at the bidder's own expense.
- 1.8.3 The Bidder and any of its personnel or agents will be granted permission by APDCL to enter upon its premises and lands for the purpose of such inspection, but only upon the express condition that the bidder, its personnel and agents will release and indemnify APDCL 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.
- 1.8.4 Bidders shall never publish /quote information gathered in this process, either in full or part. APDCL is entitled to claim compensation from any defaulting bidders.

2. BIDDING DOCUMENTS

2.1 Contents of Bidding Document

2.1.1 The Bidding Document includes the following Sections, which shall be read in conjunction with any amendment issued in accordance with sub-clause 2.4 of this section.

- Section I : Invitation for Bid(IFB)
- Section II : Instruction to Bidders(ITB)
- Section III : Qualifying Criteria and Document Checklist
- Section IV : Scope of Work & BOQ of materials
- Section V : General Conditions of Contract (GCC)
- Section VI : Technical Specifications
- Section VII : Forms of Bid

2.2 Clarifications on Bid Document

- 2.2.1 The Bidders may seek clarifications on this bid in writing as per the prescribed format (Annexure-1 of Section: VII) through email to reach APDCL on or before **10:00 Hrs. of 06-09-2022**. The Email shall be sent to cgm.ppd@apdcl.org
- 2.2.2 The Utility shall not be obliged to respond to any request for clarification received later than the above period.
- 2.2.3 APDCL may issue clarification only, at its sole discretion, which is considered reasonable by it.

- 2.2.4 Any such clarifications issued shall be made available in the official website of APDCL www.apdcl.org
- 2.2.5 Verbal clarification and information given by Employer or his employee(s) or his representative(s) shall not in any way be binding on Employer.
- 2.2.6 APDCL is not under any obligation to entertain/respond to suggestions made or to incorporate modifications sought for.

2.3 Pre-Bid Meeting

- 2.3.1 In order to provide response to any doubt regarding Bidding Documents or to clarify any issue arising out of it, a pre-bid meeting will take place at the venue and time specified in the Section I of this Bidding Document.
- 2.3.2 The bidder's designated representative(s) is/are invited to attend a pre-bid meeting. The purpose of the meeting shall be to clarify any issue regarding the Bidding Documents in general and the Technical Specifications in particular. The Bidder is requested, as far as possible to submit any question in writing, to reach the Employer not later than the period notified in the sub-clause 2.2 under this section.
- 2.3.3 Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

2.4 Amendments to BIDDOCUMENT

- 2.4.1 At any time prior to the deadline for submission of bids, APDCL may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Document by issuance of amendment(s).
- 2.4.2 The amendment(s) shall be made available in E-tendering portal as well as in the official website of APDCL. Bidders are required to regularly check / visit the E-procurement web-portal and immediately acknowledge receipt of any such amendments, and it will be assumed that the information contained therein will have been taken into account by the Bidder in its bid.
- 2.4.3 APDCL shall not be responsible for any delay in receipt of the addendum/ modification/ errata and/ or revised document and receipt of the same by the Bidders. Late receipt of any addendum/ modification/ errata and/ or revised document will not relieve the Bidder from being bound by that modification or the Bid Submission Deadline.
- 2.4.4 In order to provide reasonable time to the Bidders to incorporate the modification into account while preparing their Bid, or for any other reasons, APDCL may, at its discretion, extend the deadline/ timeline for Bid submission.

3. PREPARATION OF BIDS

3.1 Language of Bid

- 3.1.1 The bid prepared by the Bidder and all correspondences and documents relating to the bid, exchanged by the Bidder and APDCL shall be written in the English language, provided that any printed literature furnished by the Bidder may be written in another language so long as accompanied by an English translation of its pertinent passages. Failure to comply with this may disqualify a bid. For purposes of interpretation of the bid, the English translation shall govern.

3.2 Documents comprising the Bid

- 3.2.1 The E-bid submitted by the bidder shall be in two envelope and shall comprise the following: -

Envelope I: - Relevant technical and commercial documents required to fulfill the eligibility criteria as specified under Section III: Qualifying Criteria and Document Checklist shall be submitted by the bidder on the E-tendering portal by the schedule date and time of submission of bids.

Envelope II: - Financial bid shall also be submitted electronically as per the prescribed format provided along with the tender documents.

- 3.2.2 Alternative (alternate technology/method/design/functionality or proposals with multiple options) Bids shall be rejected.

3.3 Bid Forms

- 3.3.1 The information and documents shall be prepared and submitted by the Bidders as per the enclosed formats in the Section VI of this bidding document. 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.

3.4 Bid Prices

- 3.4.1 The contract shall be for the whole works as described in **Section IV – Scope of Works & BOQ of materials** based on the priced Bill of Quantities submitted by the Bidder.
- 3.4.2 Items against which no price is entered by the Bidder will not be paid for by APDCL when executed and shall be deemed to be covered by the prices for other items.
- 3.4.3 All duties, taxes, and other levies payable by the Contractor under the Contract, shall be included in the rates and prices and the total bid price submitted by the Bidder.

3.5 Bid Currencies

- 3.5.1 Prices shall be quoted in Indian Rupees only.

3.6 Bid Security/Earnest Money Deposit (EMD)

- 3.6.1 The Bidder shall furnish as part of its bid, a bid security, for the amount as specified in this bid Document through online mode.
- 3.6.2 Any bid not accompanied by a bid security or an acceptable bid security shall be rejected by APDCL as being nonresponsive. The bid security of a joint venture must be in the name of all the partners/lead partner of the joint venture submitting the bid.
- 3.6.3 The bid security of a joint venture must be in the name of all the partners/lead partner in the joint venture submitting the bid.
- 3.6.4 The bid security of a bidder lying with APDCL, if any, in respect of other bids awaiting decision shall not be adjusted towards bid security required under this Bidding Documents.
- 3.6.5 The Bid Securities of the unsuccessful bidders at the techno-commercial evaluation stage shall be returned after opening of the price-bids against the said tender. However, for the responsive bidders found to be unsuccessful at the financial evaluation stage, the Bid Security shall be returned after signing of Contract Agreement and deposition of performance security by the successful bidder to the satisfaction of APDCL.
- 3.6.6 The successful Bidder shall be required to keep its bid security valid for a sufficient period till the performance security(ies) pursuant to ITB Clause 6.3 are furnished to the satisfaction of APDCL. The Bid Security of successful Bidder shall be released upon the signing of Contract Agreement as well as submission and acceptance of the Performance Security to the satisfaction of APDCL.
- 3.6.7 No interest shall be payable by the Employer on the above Bid Security.
- 3.6.8 The Bid Security may be forfeited–
 - 3.6.8.1 If the Bidder withdraws its bid during the period of bid validity specified by the Bidder in the Bid Form;or
 - 3.6.8.2 In case of a successful bidder; if the bidder fails within the specified timelimit-
 - i) to sign the Contract Agreement, in accordance with ITB Clause 6.4or,
 - ii) to furnish the required performance security(ies), in accordance with ITB Clause 6.3 and/or to keep the bid security valid as per the requirement of ITB Sub-Clause 3.6.6.

3.7 Validity of the Bid

- 3.7.1 Bids shall remain valid for the period of **180 (one hundred eighty) days** from the last date of bid submission. A bid valid for a shorter period shall be rejected by the APDCL as being non-responsive.
- 3.7.2 In exceptional circumstance, APDCL may solicit the Bidder's consent to an extension of the bid validity period. The request and responses thereto shall be made in writing or by email.

4. SUBMISSION OF BIDS

4.1 Method of submission of Bid

The procedure for bid submission to participate in this E-tender has been delineated as follows: -

- 4.1.1 The technical and financial bids must be submitted through online mode only at <https://assamtenders.gov.in> on or before the Bid Submission Deadline. The Documents to be uploaded shall be properly scanned and duly signed wherever required. All required documents as per Document Checklist must be attached as a soft copy during technical bid submission. The price bid should distinctly indicate the following components - Quoted price with clear differentiation of Taxes and Duties. The bidders are to quote FIRM rates showing break up of all taxes and duties in the 'Schedule of Price'.
- 4.1.2 Bidders must make online deposit of tender processing fee of **Rs. 5,000.00 (Rupees Five Thousand)** only while online submission of tenders in <https://assamtenders.gov.in>.
- 4.1.3 Bidders must make online deposit of EMD (Earnest Money Deposit) of **Rs. 5,50,000.00 (Rupees Five Lakh Fifty Thousand)** only while online submission of tenders in <https://assamtenders.gov.in>.

4.2 Deadline for Submission of Bids

Bids must be submitted in the E-tendering portal within the stipulated date and time specified in the Section I: IFB of the Bidding Document. As the mode of submission is online, the prospective bidders are recommended to submit their bids sufficiently advance in time to avoid any last hour rush.

4.3 Late Bids

Since the bidder has to submit bids online on E-tendering portal, so bidder will not be able to upload tender after due time for bid submission on the last date of bid submission.

4.4 Modification and Withdrawal of Bids

- 4.4.1 The Bidder may modify or withdraw its bid after submission prior to the deadline prescribed for bid submission.
- 4.4.2 However, no bid shall be withdrawn, substituted, or modified after the expiry of bid submission period as specified in the tender.

5. BID OPENING AND EVALUATION

5.1 Opening of Techno-Commercial Bid

- 5.1.1 The Employer will open the Techno – Commercial Part online on the scheduled time and date as specified in the NIT. The bids shall be opened in the presence of the Bidders' authorized representatives who choose to be present, enabling them to watch the proceedings.
- 5.1.2 The Bids shall be deemed to be under consideration immediately after they are opened and confirmation or receipt of the Tender Processing Fee and Bid Security, and until an official intimation of award or rejection is made by APDCL to the Bidders.
- 5.1.3 APDCL shall prepare the summary of the bid opening in the form of Bid Opening Statement including the information of accepted bids and upload the same in the E-tendering portal to carry forward the tendering process to the Techno-Commercial Evaluation stage.
- 5.1.4 APDCL shall then separately evaluate the Bids with respect to the Eligible Criteria, sufficiency of the submission, as well as other parameters outlined in this BID DOCUMENT.

5.2 Confidentiality

- 5.2.1 Information relating to the examination, evaluation, comparison and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process.
- 5.2.2 Any attempt by a Bidder to influence APDCL in the examination, evaluation, comparison, and post qualification of the Bids or Contract award decisions may result in rejection of the Bid of that Bidder.
- 5.2.3 If any Bidder, from the time of opening the Technical Bids to the time of Contract award, wishes to contact APDCL on any matter related to the bidding process, it should do so in writing.

5.3 Clarification on Bids

- 5.3.1 To assist in the examination, evaluation, comparison and post-qualification of the Bids, APDCL 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 APDCL shall not be considered. APDCL's request for clarification and the response shall be in writing. No change in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by APDCL in the evaluation of the Financial Bids.

5.4 Responsiveness of Technical Bid

- 5.4.1 APDCL's determination of the responsiveness of a Technical Proposal is to be based on the contents of the Technical Proposal itself.
- 5.4.2 A responsive Technical Proposal is one that conforms to all the mandatory requirements, terms, conditions, and specifications of the Bidding Document

without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that:

- a) does not meet all the Minimum Technical Specifications; or
- b) affects the scope, quality, or performance of the Solution; or
- c) limits or is inconsistent with the BID DOCUMENT, APDCL's rights or the Bidder's Obligations; or
- d) If rectified would unfairly affect the competitive position of other Bidders presenting responsive Technical Proposals.

5.5 Non-Conformities, Errors, and Omissions

- 5.5.1 Provided that a Technical Bid is substantially responsive, APDCL may waive any non-conformity or omission in the Bid that does not constitute a material deviation.
- 5.5.2 Provided that a Technical Bid is substantially responsive, APDCL may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial, nonconformities or omissions in the Technical Bid related to documentation requirements. Such omission 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.
- 5.5.3 Provided that the Technical Bid is responsive, APDCL will correct arithmetical errors during evaluation of Price bids on the following basis:
 - a) 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 APDCL 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;
 - c) if there is a discrepancy between words and figures, the amount in words shall prevail. However, where the amount expressed in words is related to an arithmetic error, the amount in figures shall prevail subject to (a) and (b) above.
 - d) Except as provided in (a) to (c) herein above, APDCL shall reject the Financial Bid if the same contains any other computational or arithmetic discrepancy or error.
- 5.5.4 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.
- 5.5.5 If the price of any item is kept blank the highest rate quoted among the techno-commercial qualified bidders will be loaded for evaluation purpose. However, if the bidder happens to be L-1 then rate against the item which the bidder has kept blank will be awarded as zero i.e. he will have to execute the work without any financial involvement.

5.6 Evaluation of Techno-commercial part

- 5.6.1 APDCL shall evaluate the bidders based on the Qualifying criteria set forth in the Section III of the Bid Document.

5.7 Opening of Financial Bid

- 5.7.1 After completion of the technical evaluation, APDCL shall intimate the successful bidders for opening of Financial Bids of the responsive bidders. No objection/request from bidders in respect of evaluation of technical bids shall be entertained by APDCL after intimation in respect of opening of price bids is sent to the technically qualified bidders.
- 5.7.2 Representatives of Qualifying Bidders may be present during opening of the Financial Bids of the Qualifying Bidders at the specified date and time as intimated.
- 5.7.3 The prices and details as may be read out during the price bid opening and recorded in the Bid Opening Statement would not be construed to determine the relative ranking amongst the Bidders, or the successful Bidder, and would not confer any right or claim whatsoever on any Bidder.

5.8 Evaluation of Financial Bids

- 5.8.1 The Financial Bids will be examined to determine whether they are complete, whether any computational errors have been made and whether the bids are generally in order.
- 5.8.2 The Financial bids containing any arithmetic errors shall be evaluated in pursuant to Clause 5.5.3 under this section.
- 5.8.3 The quoted price of the responsive bidders shall be accepted/rejected in conformity to the clause 5.9 under this section.

5.9 Abnormally Low Bids (ALB)

- 5.9.1 An abnormally Low Bid is one in which the Bid price, in combination with other elements of the Bid, appears to be so low that it raises concerns as to the capability of the Bidder to perform the contract for the offered price.
- 5.9.2 For the purpose of identification and dealing with the ALBs, the MD, APDCL shall act as ex-officio Chairman of the Tender Evaluation Committee. The Committee shall undertake the following three-stage review process to check the possibility of an ALB by a potential successful bidder and take necessary action, as deemed fit. The decision of the Committee shall be conclusive and binding on all.
- i. identify abnormally low costs and unit rates by comparing them with the APDCL estimate or other substantially responsive bidders, or recently awarded similar contracts;
 - ii. clarify and analyze the Bidder's resource inputs and pricing, including overheads, contingencies and profit margins;and
 - iii. decide whether to accept or reject the Tender.
- 5.9.3 The ALBs shall be identified using any of the following 2(two) methodologies, as applicable:

When Estimated Cost is disclosed:

In this case, the ALB shall be identified based on the comparison with the Estimated Cost of the Project. The bids with quoted price below 10% (ten percent) of the Estimated Cost shall be treated as ALB by the Committee.

When Estimated Cost is not disclosed:

In this event, the Committee shall resort to a statistical approach in which first the Average Bid value shall be calculated among the substantially responsive bidders. Subsequently, the bids with quoted price found to be lower than 10% of the calculated average value shall be identified as ALBs.

- 5.9.4 Once a potential ALB has been identified, the Committee will seek a written explanation from the bidder of the reasons for the offered Tender price, including a detailed price analysis, proposed methodology, schedule, and allocation of risks and responsibilities. This may also include information regarding the economy of the manufacturing process; the services to be provided, or the construction method to be used; the technical solutions to be adopted; and any exceptionally favorable conditions available to the bidder for the works, equipment or services proposed.
- 5.9.5 Failure to furnish the required information against point 5.9.4 above within the stipulated time period will lead to the rejection of the bidder. In that case, the Committee will resort to the next lowest ranked bidder and reiterate the process, in case that bidder also happens to come under ALB.
- 5.9.6 On receiving the Bidder's justification, the Committee will meticulously examine the information provided by the bidder while taking into account all the relevant evidences produced in response to the request for clarification.
- 5.9.7 After examining the explanation given and the detailed price analyses presented by the bidder, the Committee may at its sole discretion:
 - i) accept the Tender subject to requiring the bidder to submit an Additional Performance Security in pursuant to the Clause 6.3.2 under this section to protect the Employer from any financial loss in the event of default of the successful bidder under the contract; or
 - ii) reject the Tender, if the evidence provided does not satisfactorily account for the low Tender price and make a similar determination for the next lowest ranked bid, if required.

5.10 Overall Techno-commercial Evaluation

The techno-commercially responsive Bidder with the acceptable lowest total quoted prices (inclusive of all taxes) i.e. the L1 bidder shall be the Successful Bidder.

5.11 Purchase/Domestic preference

No preference shall be given to any bidder.

5.12 Employer's Right to Accept Any Bid, and to Reject Any or All Bids

APDCL reserves the right to accept or reject any bid, and to cancel / annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to the Bidders for which the Employer shall keep record of clear and logical reasons properly for any such action / recall of bidding process. In case of cancellation / annulment, bid securities, shall be promptly returned to the Bidders.

6. AWARD OF CONTRACT

6.1 Award Criteria

- 6.1.1 APDCL will award the contract to the successful Bidder (also referred to as the L-1 Bidder) whose bid has been determined to be substantially responsive and to be the lowest evaluated bid, further acceptable as per the clause 5.9 under this section.
- 6.1.2 In the event if two or more bidders offering the same Bid Price, the Employer shall identify the bidder for award of contract on the basis of (a) highest available bid capacity, (b) Volume of similar nature of works executed during any one of the last 5 years by the bidder as prime contractor and (c) Average Annual Turnover of the Bidder during the last 3(three) consecutive FYs (2019-20, 2020-21, 2021-22)
- 6.1.3 The contract shall not be awarded to more than one bidder by splitting the work.

6.2 Notification on Award

- 6.2.1 Prior to the expiration of the period of Bid validity, APDCL shall notify the successful Bidder, in writing, that its Bid has been accepted and offer the Letter of Intent (LOI).
- 6.2.2 Within 10 (ten) days of the receipt of letter of intent (LOI) from APDCL, the successful Bidder shall furnish the Performance Security in pursuant to the clause no. 6.3 below, as per the proforma given in Annexure 5 under Section VII.
- 6.2.3 Failure of the successful Bidder to submit the above-mentioned Performance Security or convey the acceptance of the LOI shall constitute sufficient grounds for the annulment of the LOI and forfeiture of the Bid Security. In that event, APDCL may resort to the next successful Bidder whose offer is responsive and is determined by APDCL to be qualified to perform the project satisfactorily.
- 6.2.4 The bidder shall be offered the Letter of Award (LOA) after submission of the LOI Acceptance Letter and furnishing and acceptance of the Performance Security to the satisfaction of APDCL in pursuant to clause 6.3.
- 6.2.5 Until a formal Contract is prepared and executed, the Letter of Award (LOA) shall constitute a binding Contract.

6.3 Performance Security

- 6.3.1 The successful bidder shall have to deposit the Performance Security in the shape of Bank Guarantee of nationalized bank or scheduled bank of RBI having their regional office in Assam or at least a branch office at Guwahati (in case of those, whose regional office is not located in the state of Assam) with a certificate from the Bank

to the effect that the verification or any confirmation regarding the BG issued by the bank can be taken up with the Branch office at Guwahati pledged in favour of "ASSAM POWER DISTRIBUTION COMPANY LIMITED." as per proforma for an amount equivalent to 10% (ten percent) of the contract value of the order. The Performance Security shall be furnished to the CGM (PP&D), APDCL along with the acceptance of Letter of Intent (LOI), valid for a period of 60(sixty) days beyond the stipulated date of completion of the Project as per LOI/LOA.

Further, a Performance Bank Guarantee (PBG) for an amount equivalent to 10% of the Contract value shall be furnished after successful completion and commissioning of the Project covering the period of 1(one) month beyond the warranty period of 60(sixty) months. The earlier BG i.e., the Performance Security shall be released on submission and acceptance of the 2nd BG i.e. Performance Bank Guarantee.

In case the successful bidder furnishes a Performance Bank Guarantee for a shorter duration (not less than 18 months) then it shall be the sole responsibility of the successful bidder to get the Performance Bank Guarantee extended at least three months before the expiry date in order to maintain the total validity period as mentioned in the foregoing paragraph, failing which the payment against the subsequent progressive bills may be suspended.

If supplier fails or neglect to perform any of his obligations under the contract, the APDCL shall have the right to forfeit in full or in part at its absolute discretion the performance security deposit furnished by the contractor. No interest shall be payable on such deposits. Detail order will be issued on receipt of acceptance of LOI and Performance security deposit. The performance security of a joint venture shall be in the name of **Lead Partner** of the joint venture.

6.4 Additional Performance Security in the event of ALB

In the event that an Abnormally Low Bid has been accepted for award of contract, the successful bidder shall be required to submit an additional Performance Security along with the regular Performance Security for an amount calculated as under:

- i) If the Bid Price offered by the shortlisted Bidder is lower than 10% but up to 20% of the estimated Project cost, then the Additional Performance Security shall be calculated @ 5% of the Contract Price.
- ii) If the Bid Price offered by the shortlisted Bidder is below 20% of the estimated Project cost, then the Additional Performance Security shall be calculated @ 15% of the Contract Price.
- iii) The additional Performance Security shall be treated as part of the Performance Security and shall be valid for a period coextensive with the Performance Security viz. 60(sixty) days beyond the date of completion of the project.
- iv) Non-submission of the additional Performance Security shall constitute sufficient ground to reject the bid and similar assessment pursuant to clause 1 will be made for the next ranked bidder.

6.5 Signing the Contract Agreement

- 6.5.1 The successful bidders shall have to enter into an agreement with APDCL within 10 (ten) days from the date of issue of detailed work order (LOA) failing which the LOA shall be rescinded without any further communication from APDCL end.
- 6.5.2 The successful Bidder shall sign on the Contract Agreement with seal on each page, date as per the prescribed format provided in Annexure 7 under Section VII.

6.6 Fraudulent practices and Corruption

6.6.1 It is the APDCL's policy that requires the Bidders, suppliers, and contractors under the contract to observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, APDCL defines, for the purpose of this provision, the terms set forth below as follows:

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

6.6.2 APDCL will reject a proposal for award 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;

6.6.3 APDCL will sanction a firm or individual, including declaring ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for, or in executing, a contract; and

6.6.4 APDCL will have the right to require that the provision be included in Bidding Documents and in contracts, requiring Bidders, suppliers, and contractors and their sub-contractors, if any to permit the Employer to inspect their accounts and records and other documents relating to bid submission and contract performance and to have them audited by auditors appointed by the Employer.

-----*End of Section II (ITB)*-----

**Section III:
Qualification Criteria
&
Document Checklist**

1. Qualifying Criteria and Document Checklist

The Eligibility Criteria described below shall determine the Bidder's Qualification:

- 1.1 Bids may be submitted by qualified individual firm or Joint Ventures of firms provided they can be classified as one of the following:
- 1.1.1 A single firm that on its own meets all the qualification requirements as mentioned in the Section- "Technical Requirements" and "Financial Requirements" below.
 - 1.1.2 A Joint Venture (JV) can be defined as association of two or more firms in which all such firms shall be jointly and severally bound to the Employer for the fulfillment of the provisions of the Contract and shall designate one of such firms 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 written consent of the Employer.
 - 1.1.3 No bidder, either JV partners or single bidder, who is blacklisted or given a "Stop Deal" notice by any of the Government of ASSAM/ Government of India Departments, Agencies, or Public Sector Undertakings (PSU) including APDCL, can take part in the bid.
 - 1.1.4 APDCL may assess the capacity and capability of the bidder, to successfully execute the scope of work covered under the contract within stipulated completion period. This assessment shall inter-alia include (i) document verification; (ii) bidders work/manufacturing facilities visit; (iii) manufacturing capacity, details of works executed , works in hand, anticipated in future & the balance capacity available for present scope of works; (iv) details of plant and machinery, manufacturing and testing facilities, manpower and financial resources; (v) details of quality systems in place; (vi) past experience and performance; (vii) customer feedback; (viii) banker's feedback etc. Utility/Owner reserves the right to waive minor deviations if they do not materially affect the capability of the bidder to perform the contract.

1.2 Technical Requirements

Bid shall be submitted by an individual firm or Joint Venture of firms who shall meet the following Technical requirements:

- 1.2.1 The bidder shall be a single Indian legal entity in the form of sole proprietorship, or partnership firm set up under Indian Partnership Act, 1932, or HUF, or company registered under the Indian Companies Act, 1956 or a Limited Liability Partnership (LLP) registered under the LLP Act, 2008 and necessary supporting documents for the same must be submitted by the bidder along with the technical bid.

- 1.2.2 The bidder must be registered in the **Contract Management System (CMS)** portal of APDCL and shall furnish the Provisional/Final Registration Certificate at the time of bid submission.
- 1.2.3 The bidder must have valid Electrical Contractor's and Supervisor's License (HT minimum up to 33 KV) issued by any Licensing Authority of Govt. of Assam. In case, the bidder does not have the licenses from the Licensing Authority of Govt. of Assam but has valid licenses from other Licensing Authority under the Electricity Act 2003, the bidder will have to obtain the same from the Licensing Authority of Govt. of Assam in case of award of contract.
- 1.2.4 The bidder must have the experience of **successful construction/renovation/re-conductoring of minimum 10 cKm of 33 KV line with ACSR/AAAC conductor under the scope of one single contract during last 5 years** as on the date of opening of techno- commercial bid and the same must be in satisfactory operation for **at least 1 (one) year**.
- 1.2.5 The experience certificate furnished against point 1.2.4 above must be from an officer not below the rank of **CEO/DGM/Superintending Engineer** of electrical utilities within India.
- 1.2.6 The bidder must furnish the GTP along with the necessary type test report of the all major terminal equipments and line materials at the time of online submission of bid. However, in case the bidder is unable to upload all the relevant documents due to some technical reason, the bidder must invariably upload an undertaking stating that the GTPs & type test report of all the major materials as stipulated in the bid document shall be furnished at the time of hardcopy submission of bid. Failure to submit the said documents shall be treated as a major technical deviation and may lead to rejection of the bidder.
- 1.2.7 The bids submitted by the bidders shall be rejected, if-
- a) If any milestones of an ongoing project of APDCL wherein the bidder is involved, has not been completed on time; or
 - b) If any of the projects awarded to the bidder has not been completed within the scheduled project completion period and the reason for such delay is solely because of fault of contractor or reasons attributed to him/her.

1.3 Financial Requirements

Bid shall be submitted by an individual firm or consortium of firms who shall jointly meet the following financial requirements:

- 1.3.1 Minimum Average Annual Turnover (MAAT) for the last 3(three) consecutive financial years 2019-20, 2020-21, 2021-22 of the bidder shall be at least **2.60 Crores** and must be certified by a registered Chartered Accountant. This shall be supported by copy of audited balance sheet for the said years along with the subsequent income tax return statements.
- 1.3.2 In case of Joint Venture bids, the figures against Average Annual Turnovers for each Joint Venture partners shall be added together to determine the bidder's compliance with the minimum average turnover requirement against the tender. However, the lead partner must meet **minimum 40% of the MAAT** whereas each of the individual partners must meet at **least 25% of the MAAT**.

- 1.3.3 Be it a single bidder or a Joint Venture, Net Worth of all the bidders for last three (3) audited financial years i.e. 2019-20, 2020-21, 2021-22 (CA certified) shall be positive. Net worth means the sum of total of paid up capital and free reserves (excluding reserves created out of revaluation) reduced by aggregate value of accumulated losses (including debit balance in profit and loss account for current year) and in tangible assets.

1.4 Bid Capacity

Bidders fulfilling the qualifying criteria specified against Technical & Financial requirements above will be evaluated against their available Bid Capacity. They will be treated responsive only if their available bid capacity at the time of bidding is more than the estimated cost of the project. The available capacity will be calculated as under:

$$\text{Assessed available bid capacity} = (A \times N \times 2 - B)$$

Where,

A = Maximum value of Electrical works executed in any one year during the last five consecutive years (updated to the price level of the year as indicated in Annexure 10(A), rate of inflation may be taken as 10% per year taking into account the completed as well as works in progress).

N = Number of years prescribed for completion of the works for which bids are invited. (Value of N=1/2 up to 6 Months & N=1 above 6 Months)

B = Value (updated to the price level) of existing commitments and ongoing works to be completed during period of completion of works for which bids are invited. This shall be supported by an affidavit as per the format indicated in the Annexure 10(B) along with all the relevant supporting documents mention therein.

Please note that, the prospective bidder shall furnish offered price(s) where the bidder has been awarded Letter of Intent (LOI) in the ongoing tendering process in APDCL and its successor companies. This value shall be taken into account for assessment of the 'B' value.

N.B The statement showing the value of existing commitments /ongoing works as well as remaining period of completion against each of the works shall be countersigned by the Engineer in charge, not below the rank of **CEO/DGM/Superintending Engineer** of electrical utilities.

- APDCL reserves the right to carry out the Bid Capacity assessment of the Bidders and the owner's decision shall be final and binding to the bidder.
- Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:
 - Made misleading or false representations in the forms, statements and enclosures submitted as a proof of the qualification requirements; and/or
 - Record of poor performance such as abandoning the work, rescinding of contract for which the reasons are attributed to the non-performance of the contractor, consistent history of litigation awarded against the Applicant or financial failure due to bankruptcy. The rescinding of contract of a Joint Venture on account of reasons other than non-performance, such as most experience partner of Joint Venture pulling out, court directions leading to breaking up of a Joint Venture before the start of work, which are not attributable to the poor performance of the contractor will, however, not affect the pre-qualification of the individual partners.

5.13 Document Checklist:

S/N	Attachment	Form of Submission	To be submitted by the Single Bidder / Lead partner of Joint Venture	To be submitted by all other partners in case of a JV
1.	Bid submission covering letter	On Official Letter Head of the Single bidder/Lead partner signed by all JV partners in case of a JV (as per ANNEXURE-2)	√	
2.	EMD	As mentioned in NIT	√	
3.	Tender Processing Fees	As mentioned in NIT	√	
4.	Notarized Joint Venture Agreement entered amongst all Members of the Bidding partners.	Non-judicial stamp paper of Rs. One Hundred only.	√	
5.	Notarized Power of Attorney in favor of the Lead partner of the JV signed by all the JV partners.	Non-judicial stamp paper of Rs. One Hundred only.		√
6.	Notarized Power of Attorney by Lead partner of JV authorizing an Individual designated representative for the joint venture.	Non-judicial stamp paper of Rs. One Hundred only.	√	
7.	List of all work orders and relevant Experience Certificates establishing the Bidder's eligibility in pursuant to point 1.2.4 & 1.2.5 under this section.	Work orders shall be accompanied by the corresponding Performance certificate clearly mentioning all the details as per point 1.2.4 & 1.2.5 on concerned utility's official letter head. (refer to Annex. 8)	√	√
8.	CA certified company balance sheet of last 3 (three) consecutive financial years i.e. 2019-20, 2020-21, 2021-22 distinctly indicating the Net Worth, Revenue heads and Turnover corresponding to sole bidder/each individual partners of the JV	CA certified and as per Annex. 9	√	√
9.	Certificate of Incorporation/Firm Registration/ Trade License, whichever applicable		√	√

10.	CMS Registration Certificate	System generated copy	√	√
11.	Documents establishing adequate Bid Capacity	As per Annex. 10(A) & 10(B)	√	√
12.	Self-Attested copy of GSTN certificate of all the JV partners.		√	√
13.	Self-Attested copy of PAN Card for all the JV members.		√	√
14.	Name and Contact Information of all JV partners (Complete address with email/phone no)	On Official Letter Head of each JV Partner	√	√
15.	Self-certification of Non-Blacklisting/No litigation by/with any of the Government Departments, Agencies or Public Sector Undertaking (PSU) including APDCL/AEGCL/APGCL	On Official Letter Head of each JV partner	√	√
16.	Letter of consent regarding compliance of terms & conditioning of each element of the Bid	On Official Letter Head of each sole Bidder/all members including Lead partner	√	√
17.	Certificate showing the number of skilled manpower for relevant technical skill set, individually for each JV partner.	Self-certified by each partner (refer to Annex. 11)	√	√
18.	Project execution Plan	in PERT chart	√	
19.	Provident Fund (PF) Certificate indicating PF Code of the Bidder/ each Consortium Member.		√	√
20.	Employees' State Insurance Corporation (ESIC) Registration Certificate		√	√
21.	Up to date Labour License for the Electrical Installation works		√	√
22.	Up to date Electrical Contractor's License & Supervisors' competency License in pursuant to point no. 4.2.3		√	√
23.	Bank Solvency Certificate indicating various financial parameters like limit of liquid assets, line of credit etc.		√	√
24.	Proof of availability of the tools, tackles, spare parts, etc. for carrying out the works.			
25.	GTP compliance (PSC Pole/ST Pole/ACSR conductor/Insulators), as mentioned in Section VI : Technical Specifications Or Submission of an undertaking by the Bidder to furnish all the GTPs and necessary type test reports against the above materials along with the hard copy submission of the bid.		√	

**Section IV:
Scope of Work and Bill of Quantity
(BoQ)**

1.1. Name of Work:

- 1.1.1. Reconductoring of 33 KV Domoni-Damra Line from 132/33 KV Domoni (Matia) Grid Sub Station to 33/11 KV Damra Sub Station from existing AAAC Raccon Conductor to ACSR Wolf Conductor **(Line Length: 20 cKm)** under Dudhnoi ESD within the jurisdiction of Bongaigaon Electrical Circle, APDCL under SOPD 2022-23 Scheme”.

1.2. Scope of Work:

The various activities under the scope of work shall cover the following-

- 1.2.1 Site survey work.
- 1.2.2 Procurement and supply of all materials required for the work. Procurement of the BOQ materials shall be as per the Technical specifications mentioned in the Bid (Section: VI).
- 1.2.3 Arrange inspection/testing of any/all items ordered at manufacturer's works for officer deputed by APDCL for such inspection/testing.
- 1.2.4 Site delivery, loading, unloading, storage and handling of all materials supplied including watch and ward for safe custody till handover.
- 1.2.5 Site fabrication work as per requirement.
- 1.2.6 Submission of implementation schedule from the date of award of contract for Erection, testing and commissioning of all materials/equipment supplied/system installed.
- 1.2.7 Project management and site organization.
- 1.2.8 Obtaining all statutory clearances from Government Departments, Village Panchayats etc. wherever necessary.
- 1.2.9 Submission of technical specification/Test Certificate/Drawings etc. of all materials supplied.
- 1.2.10 A list of various items normally involved in proposed type of work is provided in this document. This, however, is not to be considered as limiting but only typical. Bidders' scope will include all other items and materials as may be required to effectively complete the work.
- 1.2.11 Return of dismantled materials of dismantled lines, if any, to the concerned divisional store. Bidder shall compulsorily consider the dismantling charges at the time of submission of bid.
- 1.2.12 Required jungle cutting.
- 1.2.13 Prior to starting of the physical work, the successful bidder shall carry out route survey through GPS (Global positioning System) and shall submit (in A2 paper) to office of the CGM (PP&D) for approval.

Above all, the scope of work of the bidder/contractor will include all items and facilities as may be necessary to complete the electrification work on turnkey basis and as binding requirement.

1.1. Bill of Quantity (BoQ)

The schedule of items against the aforesaid work are as follows:

- 1.1.1. **BOQ No. 1:** Reconductoring of 33 KV Domoni-Damra Line from 132/33 KV Domoni (Matia) Grid Sub Station to 33/11 KV Damra Sub Station from existing AAAC Raccon Conductor to ACSR Wolf Conductor (Line Length: 20 cKm) under Dudhnoi ESD within the jurisdiction of Bongaigaon Electrical Circle, APDCL.

Sl. No.	Item Description	Unit	Qty.
1	PSC Pole 9.75 Mtr	No	230
2	GI Steel Tubular Pole SP-76	No	34
3	ACSR Wolf Conductor	Km	66
4	GI Channel Cross Arm (100x50x6x2200) mm	No	50
5	GI Channel Cross Arm (50x50x6) mm	No	45
6	GI Angle (100x50x6x3200) mm	Mtr	45
7	GI 33 KV "V" Cross Arm with channel size (100x50x6)mm	No	249
8	GI Pole Clamp (50x6) mm	No	528
9	PG Clamp for ACSR Wolf	No	490
10	Jointing Sleeves for wolf	No	70
11	33 KV Polymeric Pin Insulator (FRP 34 mm)	No	750
12	33 KV Disc Insulator (Polymeric) 90 KN (T&C)	No	590
13	H/W fitting for Disc Insulator T&C 90kN tension type	No	590
14	CI Earth Pipe 1.8 m Inner dia 100 mm, outer dia 110 mm with perforated holes of 15 mm dia at 30 cm interval	No	34
15	Hot Dip GI Wire 6 SWG	Kg	340
16	HT stay set	Set	20
17	33 KV HT Guy Insulator	No.	20
18	Hot Dip GI Wire Stay Wire 7/10 SWG (For HT)	Kg	200
19	GI Barbed wire Type A	Kg	50
20	HT Danger Plate	No	230
21	GI Nuts and Bolts (Assorted) with GI Washer	Kg	550
22	Grouting of GI Steel Tubular Pole SP-76	No	34
23	Grouting of PSC Pole 9.75 m	No	230
24	Dismantling of AAAC Raccon conductor, Disc insulator etc.	Job	1

Section V: General Conditions of Contract (GCC)

Table of Contents

1. General Introduction	
1.1. Definitions and Interpretations -----	40
1.2. Language-----	40
1.3. Governing Laws-----	41
1.4. Intellectual Property-----	41
1.4.1. CopyRight-----	41
1.4.2. Confidential Information-----	41
2. Subject Matter of Contract	
2.1. Scope of Work-----	42
2.2. Contractor’s Responsibilities-----	42
2.3. Employer’s Responsibilities-----	42
2.4. Estimated Cost of the project-----	43
2.5. Funding of the Project -----	43
3. Execution of the Project	
3.1. Project Completion Period-----	43
3.2. Project implementation Schedule-----	43
3.3. Extension of time for Completion-----	43
3.4. Project Management & Site Organization-----	44
3.5. Subcontracting-----	44
3.6. Site Regulation & Safety-----	44
3.6.1. Contractor’s Supervision-----	44
3.6.2. Environmental Considerations-----	45
3.6.3. Adherence to the Safety Provisions-----	45
3.7. Compliance with Labour Regulations -----	45
4. Quality Control	
4.1. Inspection & Testing-----	46
4.2. Additional Tests-----	47
4.3. Test Reports-----	47
5. Payment	
5.1. Contract Price-----	48
5.2. Terms of Payment -----	48
5.3. Taxes & Duties-----	50
6. Guarantees and Penalties	
6.1. Liquidated Damage & Penalty-----	51
6.2. Warranty-----	51
6.3. Liability/Indemnity-----	51
7. Risk Distribution	
7.1. Loss of/Damage to property; Accident or injury to workers; indemnification—	52
7.2. Insurance-----	52
7.3. Force Majeure -----	52
8. Change in Contract Elements	
8.1. Quantity Variation-----	53
8.2. Change in Laws & Regulations -----	53
8.3. Change orders & Contract Amendments-----	53
9. Resolution of Disputes	
9.1. Settlement of Disputes-----	54
9.2. Arbitration-----	54
9.3. Legal Jurisdiction-----	54
10. Termination of Contract	
10.1. on Contractor’s default -----	54
10.2. on Owner’s Initiative -----	55
11. Assignment -----	56
12. Disclaimer -----	56

1. General Introduction

1.1 Definitions & Interpretations

The following terms appearing in the Bid Document shall have the meaning herein indicated unless there is anything repugnant in the subject or context.

- 1.1.1 Employer/Purchaser/Owner means Assam Power Distribution Company Limited (in short APDCL)
- 1.1.2 “Contractor” means the firms whose bid to perform the Contract has been accepted by the Employer and is named in the Contract Agreement, and includes the legal successors or permitted assigns of the Contractor.
- 1.1.3 “Contract” shall mean and include the general conditions, specifications, schedules, drawings, tender forms, bidding schedules, covering letter, schedule of prices, any special conditions applying to the particular contract specification, amendments if any, letter of award, letter of acceptance and contract agreement to be entered into.
- 1.1.4 “Contract Period” means the period from the Contract commencement date to the date on which Warranty Period is over. Date of Awarding of LOA shall be treated as the “date of commencement of contract”.
- 1.1.5 “Facilities” means the Materials and Equipment to be supplied and installed/erected, as well as all the Installation Services to be carried out by the Contractor under the Contract.
- 1.1.6 “Site” means the land and other places upon which the Facilities are to be installed, and such other land or places as may be specified in the Contract as forming part of the Site.
- 1.1.7 “Subcontractor” means firms/ corporations/government entities to whom execution of any part of the Facilities, including preparation of any design or supply of any Plant and Equipment, is sub-contracted directly or indirectly by the Contractor with the consent of the Employer in writing, and includes its legal successors or permitted assigns.
- 1.1.8 “Taking Over” means the Employers’ written acceptance of the Facilities under the Contract, after successful Operation and acceptance of the facilities by the Employer.
- 1.1.9 “Time for Completion” means the time within which Completion of the Facilities is to be attained in accordance with the scope of work and specifications, as a whole and “Taking Over” by the Employer is to be attained.
- 1.1.10 “Day” shall mean a calendar day.
- 1.1.11 “Month” shall mean a calendar month.

1.2 Language

- 1.2.1 The official language of the Contract is English. Contract as well as all correspondence and documents relating to the Contract exchanged by the Contractor and APDCL shall be written in English. Supporting documents and printed literature that are part of the Contract may be in another language provided they are accompanied by an accurate translation of the

relevant passages in English, in which case, for purposes of interpretation of the Contract, the English translation shall govern.

- 1.2.2 The Contractor shall bear all costs of translation to English and all risks of the accuracy of such translation. The Contractor shall be bound to the English translation and what has been stated therein.

1.3 Governing Laws

- 1.3.1 The Contract shall be governed by and interpreted in accordance with the laws of the India. The Gauhati High Court shall have exclusive jurisdiction in respect of any disputes relating to the tendering process, award of Contract and execution of the Contract.

- 1.3.2 In all cases, this contract shall be governed by and interpreted in accordance with the Law of the Union of India. In this context, the expression 'Law' takes within its fold statutory law, Judicial Decisional Law, Delegated Legislation and relevant regulations as well.

1.4 Intellectual Property

1.4.1 Copy Right

The Contractor shall indemnify APDCL against all claims, actions, suits and proceedings for the infringement or alleged infringement of any patent, design or copyright protected either in the country of origin or in India for the use of any equipment supplied by the Contractor but such indemnify shall not cause any use of the equipment other than for the purposes indicated by or reasonably to be inferred from the specification.

1.4.2 Confidential Information

- 1.4.2.1 Both Contractor and APDCL shall undertake to each other to keep confidential all information (written as well as oral) concerning the business and affairs of the other, which has been obtained or received as a result of the discussions leading up to or the entering of the Contract.

- 1.4.2.2 After the entering of the contract, APDCL and the Contractor shall keep confidential and shall not, without the written consent of the other Party hereto, divulge to any third party any documents, data, or other information furnished directly or indirectly by the other Party hereto in connection with the Contract, whether such information has been furnished prior to, during or following completion or termination of the Contract. Notwithstanding the above, the Contractor may furnish to its subcontractor such documents, data, and other information it receives from APDCL to the extent required for the subcontractor to perform its work under the Contract, in which event the Contractor shall obtain from such subcontractor an undertaking of confidentiality similar to that imposed on the Contractor under this Clause.

- 1.4.2.3 APDCL shall not use such documents, data, and other information received from the Contractor for any purposes unrelated to the Contract.

Similarly, the Contractor shall not use such documents, data, and other information received from APDCL for any purpose other than the design, procurement, or other work and services required for the performance of the Contract.

1.4.2.4 The obligation of a Party under Clauses 1.4.2.1 and 1.4.2.2 above, however, shall not apply to information that:

- APDCL or Contractor need to share with the institutions participating in the financing of the Contract;
- now or hereafter enters the public domain through no fault of that Party;
- can be proven to have been possessed by that Party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other Party; or
- Otherwise lawfully becomes available to that Party from a third Party that has no obligation of confidentiality.

1.4.2.5 The above provisions of this Section 1.4.2 shall not in any way modify any undertaking of confidentiality given by either of the Parties hereto prior to the date of the Contract in respect of the Supply or any part thereof.

1.4.2.6 Each of the Parties to this contract, undertakes to the other to take all such steps as shall from time to time be necessary to ensure compliance with the provisions of the above clauses by its employees, agents and sub-contractors.

1.4.2.7 The provisions of this Section 1.4.2 survive completion or termination, for whatever reason, of the Contract.

2. Subject Matter of Contract

2.1 Scope of Works

As stipulated under clause no. 1.2 (under Section IV) of the Bid Document.

2.2 Contractor's Responsibilities

2.2.1 The Contractor shall successfully implement this project as per the Scope of Work, Functional Requirements, Minimum Technical Standards (MTS) mentioned in this BIDDOCUMENT.

2.3 APDCL's Responsibilities

2.3.1 The CGM(PP&D) of APDCL shall act as the nodal point for implementation of the contract and for issuing necessary instructions, approvals, commissioning, acceptance certificates, payments etc. to the Contractor.

2.3.2 APDCL may provide on Contractor's request, particulars/ information / or documentation that may be required by the Contractor for proper planning and execution of Scope of Work under this Contract.

2.4 Estimated Cost of the Project

As mentioned in the Section I: Invitation for Bid (IFB) of the Bid Document.

2.5 Funding of the Project

The proposed work is funded by GOA under UDAY 2017-18 Scheme.

3. Execution of the Project

3.1 Project Completion Period

The entire project as mentioned in the scope of works section must be completed within 270 **(Two Hundred seventy) days** from the date of issue of LOA.

Note: The project being a time bound priority scheme, the intending bidder who feels competent enough to complete within the stipulated period shall only participate.

3.2 Project implementation Schedule

Sl. No	Description	EXECUTION PERIOD					
		7 days	53 days	60 days	60 days	60 days	30 days
1	Signing of Agreement						
2	Survey works & submission of drawings/GTP						
3	Manufacture & supply of materials						
4	Erection of equipment's						
5	Testing & commissioning						

3.3 Extension of time for Completion

Primarily, there shall not be any extension of time for project completion irrespective of size & volume of work except under the following circumstances: -

3.3.1 If at any time during performance of the Contract, the Contractor encounters conditions impeding timely delivery of the Goods or completion of related Services under the purview of the contract, the Contractor shall promptly notify APDCL in writing of the delay, its likely duration, and its cause. As soon as practicable after receipt of the Contractor's notice, APDCL shall

evaluate the situation and may at its discretion extend the Contractor's time for performance, in which case the extension shall be ratified by the Parties by amendment of the Contract.

- 3.3.2 Any occurrence of Force Majeure as provided under sub-section 8.2 under this section of the Bid Document.

3.4 Project Management and Site Organizations

In Consideration of the stringent schedule of the project, the successful bidder(s)/Contractor(s) shall exercise systematic and tightly controlled project management system with the aid of commonly used soft tools. Following are the major activities/deliverables to be organized /generated for submission to the Employer.

- 3.4.1 Liaison/Construction offices will be established in the concerned Circle of APDCL.

- 3.4.2 Work Progress Report:

- i. Progress monitoring by the contractor as per implementation schedule and approved milestones.
- ii. Fortnightly progress report (as per the format to be enclosed with LOA) shall be submitted to the concerned Deputy General Manager, Asst. General Manager & Sub-Divisional Engineers with a copy to the Chief General Manager (PP&D), APDCL.
- iii. The progress report will highlight the points like, work completion vis-à-vis planned, plan for next working period, delay analysis vis-à-vis committed schedule with reasons and remedies, etc.

- 3.4.3 Site Organization-

The bidder at each working site shall establish the following: -

- i. Storehouse
- ii. Site fabrication facilities
- iii. Construction supervision office.

- 3.4.4 All offices shall be adequately furnished and staffed so as to take all site decisions independently without frequent references to head Work's/offices.

3.5 Subcontracting

The Contractor shall not be permitted to subcontract its obligations under the Contract with APDCL.

3.6 Site Regulation & Safety

3.6.1 Contractor's Supervision

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

3.6.2 Environmental Considerations

While carrying out the assignment, no damage to environment /forests will be caused by the contractor. If so done, the contractor will have to compensate the same to the satisfaction of the concerned Authority.

3.6.3 Adherence to Safety Provisions

- 3.6.3.1 The contractor shall be held responsible for non-compliance of the safety measures, implications, injuries, fatalities and compensation arising out of such situations or incidence as per regulation 7(4) of the Central Electricity Authority (Safety Requirements for Construction, Operation and Maintenance of Electrical Plants and Electric lines) Regulations, 2011. The Contractor shall strictly comply the following: -
- i. All the electrical installation works including additions, alternations, repairs and adjustments to existing installations shall be carried out by an electrical contractor licensed in this behalf by the state government and under direct supervision of a person holding a valid certificate of electrical competency and by a person holding a valid workman permit issued or recognized by the Government.
 - ii. All the aforesaid electrical works at site shall be carried by engaging competent & designated person having valid electrical workman permit issued or recognized by the Govt. of Assam.
 - iii. The Contractor shall furnish list of designated and competent persons having valid electrical workman permits before execution of the electrical works at site to APDCL.
 - iv. The contractor shall maintain a register of designated persons wherein the names of the designated persons and purpose for which they are designated shall be entered along with their valid registered electrical workman permit or certificate number.
 - v. The register of designated persons shall be produced before competent officials of APDCL/Electrical Inspector when required by him for verification or removal of names from the aforesaid register on direction by an electrical Inspector.
 - vi. No person shall work on lines and apparatus and no person assist such person unless he is designated in this behalf and takes safety precautions as per the safety Regulations of Central Electricity Authority (CEA).
 - vii. Only persons designated in this behalf by the APDCL shall be allowed to carry out works on live lines and apparatus of APDCL.
 - viii. The Contractor shall, from the commencement of work on site till commissioning and handing over to APDCL, provide Fencing, Lighting, guarding and watching of the Works.
- 3.6.3.2 In the event of any electrical accident occurring due to use of poor quality/sub-standard material/item or due to poor workmanship on the part of the contractor/supplier leading to death or injury of any person or livestock/animal, the contractor/supplier shall be held responsible and shall be liable to pay compensation for the same. In such conditions, APDCL may at its discretion debar the concerned contractor/supplier from participating in any future bid for such period as deemed fit without prejudice to its authority to take any other legal action.

3.6.3.3 APDCL will be indemnified for all the situations mentioned as above.

3.7 Compliance with Labour Regulations

- 3.7.1.1 During continuance of the contract, the Contractor and his sub-contractors shall abide at all times by all applicable existing labour enactments and rules made there under, regulations notifications and byelaws of the State or Central Government or local authority and any other labour law (including rules). The employees of the Contractor in no case shall be treated as the employees of APDCL at any point of time.
- 3.7.1.2 The Contractor shall keep APDCL indemnified in case any action is taken against the Contractor by the competent authority on account of contravention of any of the provisions of any Act or rules made thereunder, regulations or notifications including amendments.
- 3.7.1.3 If APDCL is caused to pay under any law as principal employer such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/ byelaws/Acts/ Rules/regulations including amendments, if any, on the part of the Contractor, APDCL shall have the right to deduct any money due to the Contractor under this contract or any other contract with APDCL including his amount of performance security for adjusting the aforesaid payment. APDCL shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by APDCL.
- 3.7.1.4 Notwithstanding the above, the Contractor shall furnish to APDCL, the details/documents evidencing the Contractor's compliance to the laws applicable to establishments engaged in building and other construction works, as may be sought by APDCL.

4. QUALITY CONTROL

4.1 Inspection and Testing

All the equipment's/materials to be supplied and erected shall be tested/inspected at manufacturer's works by authorized officer/ Engineers of APDCL before dispatching them to worksite at the discretion of APDCL. The contractor shall intimate APDCL sufficiently in advance (at least 15 days) regarding the date of inspection of materials/ equipment's at manufacturer's works. The materials are to be dispatched to site only after receipt of dispatch clearance issued by the CGM (PP&D), APDCL after satisfactory testing of the same. Each lot of materials must be inspected by the concerned field officials of APDCL before deploying in the site. The following points are to be noted in addition to the above:

- 4.1.1 Prior to the inspection, the Contractor shall ensure that the number of materials offered for inspection are ready in exact quantities.
- 4.1.2 No material shall be dispatched from its point of manufacture before it has been satisfactorily inspected and tested unless the inspection is waived off by the Owner in writing. In the latter case also, the material shall be

dispatched only after satisfactory testing for all tests specified in clause 4.2 under this section have been completed.

- 4.1.3 APDCL may reject any Goods or related Services or any part thereof that fail to pass any test and/or inspection or do not conform to the specifications. The Contractor shall either rectify or replace such rejected Goods or related Services or parts thereof or make alterations necessary to meet the specifications at no cost to APDCL, and shall repeat the test and/or inspection, at no cost to APDCL, upon giving a notice as per the procedure specified above.
- 4.1.4 The acceptance of any quantity of material shall in no way relieve the Contractor of his responsibility for meeting all the requirements of the specification and shall not prevent subsequent rejection, if such materials are later found to be defective.

4.2 Additional Tests

- 4.2.1 APDCL reserves the right of having at his own expense any other test(s) of reasonable nature carried out at Contractor's premises, at site, or in any other place in addition to the type, acceptance and routine tests specified in these bidding documents against any equipment's to satisfy himself that the material comply with the required technical specifications.
- 4.2.2 APDCL also reserves the right to conduct all the tests mentioned in this specification at his own expense on the samples drawn from the site at Contractor's premises or at any other test centre. In case of evidence of noncompliance, it shall be binding on the part of the Contractor to prove the compliance of the items to the technical specifications by repeat tests or correction of deficiencies, or replacement of defective items, all without any extra cost to APDCL.

4.3 Test Reports

- 4.3.1 Copies of type test reports shall be furnished in at least six (6) copies along with one original. One copy shall be returned duly certified by APDCL only after which the commercial production of the concerned materials shall commence.
- 4.3.2 Copies of acceptance test reports shall be furnished in at least six (6) copies. One copy shall be returned duly certified by APDCL, only after which the material shall be dispatched.
- 4.3.3 Record of routine test reports shall be maintained by the Contractor at his works for periodic inspection by the APDCL's representative.
- 4.3.4 Test certificates of test during manufacturing shall be maintained by the Contractor. These shall be produced for verification as and when desired by APDCL.

5. PAYMENT

5.1 Contract Price

- 5.1.1 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.
- 5.1.2 The Contract Price shall be as specified in the Contract subject to any additions and adjustments thereto, or deductions there from, as may be made pursuant to the Contract as also subject to provisions of sub-section 5.3 under this section.
- 5.1.3 Prices charged by the Contractor for the scope of work performed under the Contract shall not vary from the prices quoted by the Contractor in its Bid, with the exception of any price adjustments authorized in the Bid Document.
- 5.1.4 Prices shall not be subject to any upward/downward revision on any account whatsoever throughout the period of contract. Provided that any revision in taxes, statutory levies, duties which is not occasioned due to any change in place, method and time of supply or non-performance/ non-fulfillment of any condition of any exemption considered by the vendor at the time of proposal, shall be considered for price adjustments.

5.2 Terms of Payment:

- 5.2.1 During the continuance of the Contract, maximum 2(two) nos. of Progressive bills shall be entertained. The progressive payments shall be made for the actual volume of work including supply as well as erection of the materials under the following conditions: -
- 5.2.2 **1st Progressive Bill:** - 80% (eighty percent) payment against 1st progressive bill shall be released retaining the balance 20% (twenty percent) amount, subject to the condition that minimum 35% (thirty five percent) BOQ materials of the LOA have been erected successfully. The bill shall be supplemented by the following documents, satisfactory verification and acceptance of which shall make the Contractor eligible for receipt of payment against the progressive bill:
- i) Unconditional acceptance of the Letter of Award (LOA) and signing of Contract Agreement by the Contractor.
 - ii) Submission of an unconditional and irrevocable Bank Guarantee for 10% (ten percent) of the Contract price in pursuant to clause 6.3.1 under Section II: ITB of the Bid.
 - iii) Submission of invoice in GST format i.e. the GSTIN & PAN No. of the Contractor as well as APDCL must be mentioned in the Bill in printed form along with the Name of Work, LOA No., HSN/SAC code etc.
 - iv) Copy of the Material Inspection & Clearance Certificate (MICC) and Material Receipt and Handing Over Voucher (MRHOV) duly signed by the concerned consignee location and duly countersigned by the CEO of the Electrical Circle.
 - v) Manufacturer's copy of the Delivery Challan.
 - vi) Manufacturer's Warranty Certificate for the materials under bill submission.

- vii) Photographic evidences of the supplied materials duly signed by the concerned consignee location and duly countersigned by the CEO of the Electrical Circle.
- viii) Submission of Physical Progress Report as per the proforma provided along with the LOA duly signed by the concerned consignee location and duly countersigned by the CEO of the Electrical Circle.
- ix) Submission of Certificate on Measurement Book by the consignee field officials and duly countersigned by the CEO to the effect that the materials under consideration have been erected, tested and commissioned as per technical specification, scope of work & approved drawings, which mean completion of erection, testing and commissioning of all materials for which bill has been raised.
- x) Verification of the actual physical progress through APDCL Project Management System (PMS). The Contractor is required to upload the up-to-date information of supplied quantities and materials erected in the PMS portal at the time of bill submission.

5.2.3 **2nd Progressive Bill:** - 80% (eighty percent) payment against the 2nd progressive bill shall be released retaining the balance 20% (twenty percent) amount, subject to the condition that minimum 25% (twenty five percent) BOQ materials of the LOA have been erected successfully in addition to the 35% materials erected earlier against 1st progressive bill. The documents indicated against point 5.2.2 above (SL No. i to xi) shall also require to be submitted along with the bill, satisfactory verification and acceptance of which shall make the Contractor eligible for receipt of the progressive payment.

5.2.4 **3rd Progressive Bill:** - 80% (eighty percent) payment against the 3rd progressive bill shall be released retaining the balance 20% (twenty percent) amount, subject to the condition that minimum 25% (twenty five percent) BOQ materials of the LOA have been erected successfully in addition to the 60% materials erected earlier against 1st& 2nd progressive bill. The documents indicated against point 5.2.2 above (SL No. i to x) shall also require to be submitted along with the bill, satisfactory verification and acceptance of which shall make the Contractor eligible for receipt of the progressive payment.

5.2.5 **4th and Final Bill:** - 100% (hundred percent) payment against the 4th and final bill shall be released along with the 20 % (twenty percent) retention amount of respective 1st, 2nd and 3rd Progressive bills after successful completion and commissioning of the project subject to submission, acceptance and validity of the Performance Bank Guarantee in accordance to clause no. 6.4 under Section II: ITB. The documents indicated against point 5.2.2 above (SL No. i to xi) shall also require to be submitted along with the bill, satisfactory verification and acceptance of which shall make the Contractor eligible for receipt of final payment.

5.2.6 All the aforesaid bills after due verification by the concerned Sub-divisional Engineer, 100% of the bill passed by the concerned Electrical Division and countersigned by the concerned Chief Executive Officer (CEO) of the Electrical Circle, shall be placed before the CGM (PP&D), APDCL for payment.

- 5.2.7 All the material and billing related transactions must be executed through ERP system only. In this context, the respective consignee locations are requested to undertake necessary steps to perform the goods receipt/service acceptance related transactions against the PO/WO number. No supply/erection bills shall be processed for payment unless the necessary transactions in ERP are performed by the concerned consignee locations.

5.3 Taxes and Duties

- 5.3.1 For goods supplied from outside India, the Contractor shall be entirely responsible for all taxes, duties, stamp duties, license fees, and other such levies imposed outside India.
- 5.3.2 For goods supplied from within India, the Contractor shall be entirely responsible for all the taxes, duties, license fees, other levies/ cessetc, incurred until the complete implementation of the turnkey project for APDCL.
- 5.3.3 The bidder shall be required to show separately the applicable rate and amount, of the Goods & Service Tax (GST) or other applicable indirect taxes in respect of the execution of the composite Turnkey works contracts, in their quoted bid price and APDCL would not bear any separate liability on these accounts. In case, the quoted information related to various taxes, duties & levies subsequently proves wrong, incorrect or misleading, APDCL will have no liability to reimburse the difference in the duty/ tax, if the finally assessed amount is on the higher side and APDCL will have right to recover the difference in case the rate of duty/ taxes finally assessed is on the lower side. APDCL shall deduct such taxes at source at applicable rates from time to time in accordance with direct and indirect taxation laws and will issue Tax Deducted at Source (TDS) Certificate to the bidder thereafter.
- 5.3.4 The contractor shall provide a copy of all paid tax challans to APDCL for record.

6. GUARANTEES AND PENALTIES

6.1 Liquidated Damages and Penalty

- 6.1.1 Except as provided under the provision of "Force Majeure", if a Contractor fails to deliver any or all of the Goods or perform the related Services within the period specified in the Contract, APDCL shall without prejudice to all its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to 1% of the value of the Goods or related Services of contract value for each week or part thereof of delay until actual delivery or performance, subject to a maximum of 10% of contract value.
- 6.1.2 If the goods and related services do not comply to the technical specifications as per the Contract or in case of detection of any defect in individual equipment or in the system as a whole, the same shall be replaced/corrected by the contractor free of cost within 15 (fifteen) days from the date of receipt of the communication.

- 6.1.3 In the event of non-compliance of the point 6.1.2, APDCL shall be free to impose any penalty as deemed fit. In addition, APDCL shall reserve the right to terminate the contract and recover liquidated damages by forfeiting the Performance Guarantee submitted to APDCL.

6.2 Warranty

- 6.2.1 All the Equipment & materials installed shall be guaranteed individually and also for integrated operations for a period of 60(sixty) months from the date of commissioning of the system.
- 6.2.2 In case of detection of any defect in individual equipment or in the system as a whole within this warranty period, the Contractor shall replace the defective materials/equipments free of cost within 15(fifteen) days from the date of receipt of the APDCL's intimation.
- 6.2.3 Warranty from the manufacturer shall be produced along with manufacturer's test certificate for all equipment/materials covered under Manufacturer's warranty.

6.3 Liability/Indemnity

The Contractor hereby agrees to indemnify APDCL, for all conditions and situations mentioned in this clause, in a form and manner acceptable to APDCL. The Contractor agrees to indemnify APDCL and its officers, servants, agents ("APDCL Indemnified Persons") from and against any costs, loss, damages, expense, claims including those from third parties or liabilities of any kind howsoever suffered, arising or incurred inter alia during and after the Contract period out of:

- a) any negligence or wrongful act or omission by the Contractor or its agents or employees or any third Party associated with Contractor in connection with or incidental to this Contract; or
- b) Any infringement of patent, trademark/copyright or industrial design rights arising from the use of the supplied Goods and Related Services or any part thereof.

7. RISK DISTRIBUTION

7.1 Loss of/ Damage to Property; Accident or Injury to Workers;Indemnification

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

7.2 Insurance

The Goods supplied under the Contract shall be fully insured by the Contractor, in INR, against loss or damage incidental to manufacture or acquisition, transportation, storage, and delivery.

7.3 Force Majeure

- 7.3.1 The Contractor shall not be liable for forfeiture of its Performance Security, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
- 7.3.2 For purposes of this Clause, "Force Majeure" means an event or situation beyond the control of the Contractor that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the Contractor. Such events may include, but not be limited to wars or revolutions, earthquake, fires, floods, epidemics, quarantine restrictions, and freight embargoes.
- 7.3.3 If a Force Majeure situation arises, the Contractor shall promptly and no later than 10 (ten) days from the first occurrence thereof, notify APDCL in writing of such condition and the cause thereof. Unless otherwise directed by APDCL in writing, the Contractor shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
- 7.3.4 The decision of APDCL with regard to the occurrence, continuation, period or extent of Force Majeure shall be final and binding on the Contractor.

8. Change in Contract Elements

8.1 Quantity Variation

There may be increase or decrease in quantity of individual item subject to the condition that the corresponding change in total contract value does not increase or decrease by more than 10% (ten percent). The quantity variation is allowed at the unit rate of individual material quoted at the time of bidding or prevailing rates of those item in the Schedule of Rates, APDCL, whichever is lower. However, for consequential change in labour portion on account of such quantity variation, the price quoted in the original price schedule at the time of bidding shall only be applicable. In the event of requirement of a new material which was earlier not included in the BOQ, but now has become an integral component towards successful execution of the project, the unit rate of those materials/services shall be incorporated based on the prevailing Schedule of Rates (SOR). The variation which may occur must have the approval of CGM (PP&D), APDCL.

8.2 Change in Laws & Regulations

Unless otherwise specified in the Contract, if after the date of the Invitation for Bids, any law, regulation, ordinance, order or bylaw having the force of law is enacted, promulgated, abrogated, or changed in India where the site is located (which shall be deemed to include any change in interpretation or application by the competent authorities) that subsequently affects the Delivery Date, then such Delivery Date shall be correspondingly increased or decreased, to the extent that the Contractor has thereby been affected in the performance of any of its obligations under the Contract.

8.3 Change Orders and Contract Amendments

- 8.3.1 APDCL may at any time order the Contractor through Notice to make changes within the general scope of the Contract in any one or more of the following:
- a) drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for APDCL;
 - b) Specifications for hardware, software and Related Services;
 - c) the method of shipment or packing;
 - d) the place of delivery; and
 - e) the Related Services to be provided by the Contractor.
- 8.3.2 If any such Change Order causes an increase or decrease in the cost of, or the time required for, the Contractor's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or in the Delivery and Completion Schedule, or both, and the Contract shall accordingly be amended. Any claims by the Contractor for adjustment under this Clause must be asserted within twenty-eight (28) days from the date of the Contractor's receipt of APDCL's Change Order.
- 8.3.3 No variation or modification of the terms of the contract shall be made except by written amendment signed by the Parties.

9. Resolution of Disputes

9.1 Settlement of Disputes

- 9.1.1 APDCL and the Contractor shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.
- 9.1.2 If the Parties fail to resolve such a dispute (the date of commencement of the dispute shall be taken from the date when this clause reference is quoted by either Party in a formal communication clearly mentioning existence of dispute or as mutually agreed) or difference by mutual consultation within twenty-eight (28) days from the commencement of such consultation, either Party may require that the dispute be referred for resolution to the formal mechanisms specified in the subsequent Clauses 9.2 and 9.3 under this BID DOCUMENT.

9.2 Arbitration

All disputes or differences in respect of which the decision, if any, of the Employer has not become final or binding as aforesaid shall be settled by arbitration in the manner provided in the Company's General Conditions of Supply and Erection (GCSE).

9.3 Legal Jurisdiction

For any litigation arising out of the Contract which cannot be resolved through mutual agreement or through Arbitration, the Gauhati High Court will have the sole jurisdiction.

10. Termination of Contract

10.1 Termination of Contract for Contractor's default

10.1.1 If the Contractor shall neglect to execute the Works with due diligence and expertise or shall refuse or neglect to comply with any reasonable order given to him, in the Contract by the Engineer in connection with the works or shall contravene the provisions of the Contract, the owner may give notice in writing to the contractor to make good the failure, neglect or contravention complained of. Shall the contractor fail to comply with the notice within thirty (30) days from the date of serving the notice, then and in such case the Owner shall be at liberty to employ other workmen and forthwith execute such part of the works as the Contractor, may have neglected to do or if the owner shall think fit, without prejudice to any other right he may have under the Contract to take the work wholly or in part out of the contractor's hands and re-contract with any other person or persons to complete the works or any part thereof and in that event the Owner shall have free use of all Contractor's equipment that may have been at the time on the site in connection with the works without being responsible to the Contractor for fair wear and tear thereof and to the exclusion of any right of the contractor over the same, and the Owner shall be entitled to retain and apply any balance which may otherwise be due on the Contract by him to the contractor, or such part thereof as may be necessary, to the payment of the cost of executing the said part of the work or of completing the Works as the case may be. If the cost of completing of Works or executing a part thereof as aforesaid shall exceed the balance due to the contractor, the contractor shall pay such excess. Such payment of excess amount shall be independent of the liquidated damages for delay which the contractor shall have to pay if the completion of works' is delayed.

10.1.2 In addition, such action by the Owner as aforesaid shall not relieve the Contractor of his liability to pay liquidated damages for delay in completion of works as defined Company's General Conditions of Supply and Erection (GCSE).

10.1.3 Such action by the Owner as aforesaid, the termination of the Contract under this clause shall neither entitle the contractor to reduce the value of the contract Performance Guarantee nor the time thereof. The contract Performance Guarantee shall be valid for the full value and for the full period of the contract including guarantee period.

10.2 Termination of Contract on Owner's initiative

10.2.1 The Owner reserves the right to terminate the Contract either in part or in full due to reasons other than those mentioned under clause entitled "Contractor's Default." The Owner shall in such an event give 15 (fifteen) days' notice in writing to the Contractor of his decision to do so.

10.2.2 The Contractor upon receipt of such notice shall discontinue the work on the date and to the extent specified in the notice, make all reasonable efforts to obtain cancellation of all orders and contracts to the extent they are related to the work terminated and terms satisfactory to the Owner, stop all further sub-contracting or purchasing activity related to the work terminated, and assist the Owner in maintenance, protection, and disposition of the Works acquired under the Contract by the Owner.

10.2.3 In the event of such a termination, the Contractor shall be paid compensation, equitable and reasonable, dictated by the circumstances prevalent at the time of termination.

10.2.4 If the Contractor is an individual or a proprietary concern and the individual or the proprietor dies and if the contractor is a partnership concern and one of the partners dies then unless the Owner is satisfied that the legal representatives of the individual contractor or of the proprietor of proprietary concern and in the case of partnership, the surviving partners, are capable of carrying out and completing the Contract, the Owner shall be entitled to cancel the Contract as to its incomplete part without being in any way liable to payment of any compensation to the estate of deceased Contractor and/or to surviving partners of the contractor's firm on account of the cancellation of the contract. The decision of the owner that the legal representatives of the deceased contractor or surviving partners of the contractor's firm cannot carry out and complete the contract shall be final and binding on the parties. In the event of such cancellation, the Owner shall not hold the estate of the deceased Contractor and/or the surviving partner of the Contractor's firm liable to damages for not completing the Contract.

11. Assignment

The Contractor shall not assign, in whole or in part, their obligations under this Contract.

12. Disclaimer

While the Company will make every endeavor to extend necessary facilitation in expediting the work, the contractor shall be responsible to organize and arrange all necessary inputs right from mobilization activities up to completion of the project. Company will not entertain any failure / delay on such accounts. Also, Company will not be responsible for any compensation, replenishment, damage, theft etc. as may be caused due to negligent working, insufficient coordination with Government / non-Government / Local Authority by the contractor and/ or his personnel deputed for work. The contractor shall take necessary insurance coverage under LIC/GIC etc. for his working personnel and the goods in store as well as in transit. The contractor will be deemed to have made him acquainted with the local working conditions at site(s) and fully provide for into the bid submitted.

----- *End of Section-V (GCC)* -----

SECTION VI

TECHNICAL SPECIFICATION

CONTENTS

TECHNICAL SPECIFICATION FOR

1. STEEL TUBULAR POLES FOR OVERHEADLINES
2. PSC POLE 9.75 M
3. ACSR CONDUCTORS
4. PG CLAMP
5. POLE CLAMP
6. CAST IRON EARTH PIPE
7. HT STAY SET
8. GI STAY WIRE
9. HT GUY INSULATOR
10. 11KV AND 33 KV COMPOSITE POLYMERIC INSULATORS
11. 33KV DISC INSULATOR (POLYMERIC)
12. HARDWARE FITTING FOR DISC INSULATOR, 90 KN (B&S)
13. GI WIRE
14. GI STAY WIRE
15. GI CHANNEL CROSS ARM
16. CLAMPS AND CONNECTORS

(1)

**TECHNICAL SPECIFICATION FOR STEEL TUBULAR STEEL POLES FOR
OVERHEADLINES**

1 SCOPE:

This specification covers the general requirements towards design, manufacture, testing at manufacturers works, supply and delivery for tubular steel poles of circular cross section (swaged type) for overhead lines.

2 STANDARD:

The tubular steel poles shall conform to the latest edition of Indian Standard specification IS: 2713 (Part – I, III): 1980 or any other authoritative standards (as amended up-to- date) except where specified otherwise in this specification.

3 Topography and ClimaticCondition:

The materials offered, shall be suitable for operation in tropical climate and will be subjected to the sun and inclement weather and shall be able to withstand wide range of temperature variation. For the purpose of design, average atmospheric temperature may be considered to be 50°C with humidity nearing saturation.

4 Materials:

The materials used in construction of tubular steel poles shall be of the tested quality of steels of minimum tensile strength 540 MPa (: 55Kgf/mm²).

The materials, when analysed in accordance with IS:228(Part-III:1972) and IS:228(Part-IX) shall not show sulphur and phosphorous contents of more than 0.060 percent each.

5 Types, Size and construction:

Tubular Steel Poles shall be swaged type. GI climbing rungs each 700 mm long fabricated out of ISA 60x60x6 mm angles shall be fixed to the pole above 5 mtr .Height at an interval of 450 mm with 10 mm dia GI u BOLT, spring washers & nuts.

Swaged poles shall be made of seamless or welded tubes of suitable lengths swaged and jointed together. No circumferential joints shall be permitted in the individual tube lengths of the poles. If welded tubes are used they shall have one longitudinal weld seam only: and the longitudinal welds shall be staggered at each swaged joint.

Swaging may be done by any mechanical process. The upper edge of each joint shall be chamfered if at an angle of about 45°. The upper edge need not be chamfered if a circumferential weld is to be deposited in accordance with clause No. 5.3 2 of IS: 2713 (Part- I):1980.

The length of joints on swaged poles shall be in accordance with clause No. 5.4 of IS: 2713 (Par-I): 1980.

Poles shall be well-finished, clean and free from harmful surface defects. Ends of the poles shall be cut square. Poles shall be straight, smooth and cylindrical. The weld joints, if any, shall be of good quality, free from scale, surface defects, cracks, etc.

Tolerances for outside diameter, thickness, length, weight and straightness shall be in accordance with IS: 2713 (Part-I) :1980.

The poles shall be **GALVENISED** and coated with black bituminous paint conforming to IS : 158-1968 throughout, internally and externally, upto the level which goes inside the earth.

6 Earthing Arrangements:

For earthing arrangement a through hole of 14mm diameter shall be provided in each pole at a height of 300mm above the planting depth.

7 Tests and Test Certificates:

The following tests shall be conducted on finished poles:

- IX) Tensile test and chemical analysis for sulphur and phosphorous,
- X) Deflocculation test,
- XI) Permanent set test, and
- XII) Drop test.

In addition to above verification of dimensions as per IS: 2713 (Part-III) : 1980 shall be carried out during acceptance lots.

Number of poles selected for conducting different tests shall be in accordance to clause No. 10.1.1 and No. 10.1.12: of IS: 2713 (Part-I) 1980.

Tests shall be carried out before supply of each consignment at the manufacturer's works and test certificates should be submitted to the purchaser for approval prior to delivery.

Re-tests, if any, shall be made in accordance with IS: 2713 (Part-I) 1980.

Purchaser reserves the right to inspect during manufacturing and depute his representative to inspect/test at the works.

If any extra cost is required for carrying out the above specified tests, the same shall be borne by the manufacturer.

8 Marking:

The poles shall be marked with designation, manufacturer's identification, year of manufacture and name of the purchaser: APDCL(IPDS)

The poles may also be marked with the ISI certification mark.

9 Guaranteed technical particulars:

The manufacturer shall furnish all necessary guaranteed technical particulars in the prescribed Form enclosed hereinafter.

10 Performance:-

The manufacturer shall furnish a list of the major supplies effected during the last 3 (three) years indicating the volume of supply and actual delivery dates.

Manufacturer may not be considered if the past manufacturing experience is found to be less than 3 (three) years.

11 Deviation:-

Any deviation in technical specification shall be clearly indicated with sufficient reasons thereof. Purchaser shall however reserve the right to accept and/or reject the same without assigning any reasons what-so-ever.

ANNEXURE –‘A’

SPECIFIC TECHNICAL REQUIREMENTS FOR TUBULAR STEEL POLES : SWAGED TYPE

	14.5 meterslong	12 meterslong
1) Standard	IS: 2713 (Pat-I and III): 1980 as amended upto date	
2) Type of Pole	Swaged Type	
3) Designation	540 SP 76	540 SP 66
4) Overall Length	14.5 meters	12 meters
5) Planting depth	2.0 meters	2.0 meters
6) Height above ground	12.5 meters	10.0 meters
7) Effective length of Each section.		
a) Bottom	6.50 meters	5.80 meters
b) Middle	4.00 meters	3.10 meters
c) Top	4.00 meters	3.10 meters
8) Outside diameter and Thickness of each Section.		
a) Bottom	219.1x5.90 mm	219.1x5.90 mm
b) Middle	193.7x4.85 mm	193.7x4.85 mm
c) Top	165.1x4.50 mm	165.1x4.50 mm
9) Joint Length (in cm.):		
a) Bottom (J2)	45 cm.	45 cm.
b) Top (J1)	40 cm.	40 cm.
10) Approximate weight of Pole	380 Kg.	322 Kg.
11)Point of application of load below/top (mtr.)	0.6 mtr	0.6 mtr
12) Breaking load (inKgf)	947	1199
13) Working load with factor of Safety : 2.5 (inKgf)	379	480
14) Crippling load (inKgf)	672	851
15) Load for permanent setNot exceeding 13mm (in Kgf)	460	583
16) Load for Temporary Deflection of 157.5 mm (in Kgf)	81	169
Base Plate	A Mild Steel base plate of size 400 mm x 500 mm x 20mm shall be welded at the bottom of the pole.	A Mild Steel base plate of size 400×400×10mm shall be welded at the bottom of thepole.
Galvanization : as per IS:2629/1985, IS:2633/1986 & IS: 4736/1986 with amendment	Not less than 610g /sqm (86 micron aprox.)	Not less than 610g /sqm (86 micron aprox.)
17) Tolerance	As per IS : 2713 (Part-I & Part-III): 1980	
18) Finish	-do-	
19) Manufacturing clause	-do-	

(2)

TECHNICAL SPECIFICATION FOR PSC POLES [9.75 M]**1.0 SCOPE**

This covers design manufacturing, testing at works, transport to site, insurance, storage, erection and commissioning of PSC poles shall be of solid rectangular with an overall length of 9.75M suitable for use in overhead 33KV / 11 KV lines

2.0 Applicable Standards

The pre-stressed concrete (PSC) pole shall comply with the relevant provisions mentioned' in the' following Indian Standards or the latest versions thereof:

IS: 1678, Specification for pre-stressed concrete poles for overhead power, traction and telecommunication lines.

IS: 2905, Method of test for concrete poles for overhead power and telecommunication lines.

IS: 7321, Code of Practice for selection, handling and erection of concrete poles for overhead power and telecommunication lines.

REQUIRED TECHNICAL PARAMETERS FOR 9.75 M PSC POLES:**Terminology**

For the purpose of this specification, following definitions shall apply.

Average Permanent Load

That fraction of the working load which may be considered of long duration over a period of one year.

Load Factor

The ratio of ultimate transverse load to the transverse load at first crack.

Transverse

The direction of the line bisecting the angle contained by the conductor at the pole. In the case of a straight run, this will be normal to the run of the line.

Transverse Load at First Crack

For design, the transverse load at first crack shall be taken as not less than the value of the working load.

Working Load

The maximum load in the transverse direction, that is ever likely to occur, including the wind pressure on the pole. This load is assumed to act at a point 600 mm below the top with the butt end of the pole planted to the required depth as intended in the design.

Ultimate Failure

The condition existing when the pole ceases to sustain a load increment owing to either crushing of concrete, or snapping of the pre-stressing tendon or permanent stretching of the steel in any part of the pole.

Ultimate Transverse Load

The load at which failure occurs, when it is applied at a point 600 mm below the top and perpendicular to the axis of the pole along the transverse direction with the butt end of the pole planted to the required depth as intended in the design.

4.0 Application (9.75 meter PSC pole)

These poles shall be used for 33 kV lines, and for special locations in 11 kV lines, such as road crossings, etc.

5.0 Material

6.0 Cement

The cement used in the manufacture of pre-stressed concrete poles shall be ordinary or rapid hardening Portland cement conforming to IS: 269 (Specification for ordinary and low heat Portland cement) or IS: 8041 E (Specification for rapid hardening Portland cement), or high strength ordinary Portland cement conforming to IS: 8112 (Specification of high strength ordinary Portland cement).

7.0 Aggregates

Aggregates used for the manufacture of pre-stressed concrete poles shall conform to IS: 383 (Specification for coarse and fine aggregates from natural sources for concrete). The nominal maximum size of aggregates shall in no case exceed 10 mm (for poles above 9.0 M) and 12 mm (for 7.5 and 8.0 M poles).

Water

Water should be free from chlorides, sulphates, other salts and organic matter, Potable water will be generally suitable.

Admixture

Admixture should not contain Calcium Chloride or other chlorides and salts which are likely to promote corrosion of pre-stressing steel.

Pre-stressing Steel

The pre-stressing steel wires including those used as un-tensioned wires (See Annexure. I, II & III), should conform to IS: 1785 (part-I) (Specification for plain hard-drawn steel wire for pre-stressed concrete. Part-I cold drawn stress relieved wire), IS: 1785 (part-II) (Specification for plain hard-drawn steel wire) or IS: 6003 (Specification for indented wire for pre-stressed concrete). The type designs given in Annexure-I, II and III are for plain wires of 4 mm diameter with a guaranteed ultimate strength of 175 kg/mm².

The concrete mix shall be designed to the requirements laid down for controlled concrete (also called design mix concrete) in IS: 1343 (Code of practice for pre-stressed concrete) and IS: 456 (Code of practice for plain and reinforced concrete), subject to the following special conditions:

- a. Maximum works cube strength at 28 days should be at least 400 kg/cm² (for poles above 9.0 M) and 420 kg/cm² (for 7.5 and 8.0 M poles).
- b. The concrete strength at transfer should be at least 200 kg/cm² (for poles above 9.0 M) and 210 kg/cm² (for 7.5 and 8.0 M poles).

- c. The mix should contain at least 380 kg of cement per cubic meter of concrete.
- d. The mix should contain as low a water content as is consistent with adequate workability. If it becomes necessary to add water to increase the workability, the cement content also should be raised in such a way that the original value of water cement ratio is maintained.

DESIGN REQUIREMENTS

The poles shall be designed for the following requirements:

- a. The poles shall be planted directly in the ground with a planting depth as per IS:1678.
- b. The working load on the poles should correspond to those that are likely to come on the pole during their service life. Designs given in Annexure I, II and III are for 140 kg, 200 kg, 300 kg, and 400 kg., applied at 0.6 M from top.
- c. The factor of safety for all poles above 9.5 M shall not be less than 2.0. For 7.5 M and 8.5 M poles, the factor of safety shall not be less than 2.5.
- d. The average permanent load shall be 40% of the working load.
- e. The F.O.S. against first load shall be 1.0.
- f. At average permanent load, permissible tensile stress in concrete shall be 30 kg/cm².
- g. At the design value of first crack load, the modulus of rupture shall not exceed 53.0 kg/cm² for M-400 concrete and 55.2 kg/cm² for M-420 concrete.
- h. At the design value of first crack load, the modulus of rupture shall not exceed 53.0 kg/cm² for M-400 concrete.
- i. The ultimate moment capacity in the longitudinal direction should be at least one fourth of that in the transverse direction.
- j. The maximum compressive stress in concrete at the time of transfer of pre-stress should not exceed 0.8 times the cube strength.
- k. The concrete strength at transfer shall not be less than half the 28 days strength ensured in the design, i.e., 400 x 0.5 = 200 kg/cm² or 420 x 0.5 = 210 kg/cm².

Service Conditions

PSC poles have to be designed to suit the following climatic conditions:

a)	Maximum temperature of air in shade	40°C
b)	Minimum temperature of air in shade	2°C
c)	Maximum temperature of air in sun	45°C
d)	Maximum humidity	93%
e)	Average number of thunder storm days per annum	45 Days
f)	Maximum rainfall per annum	3500 mm
g)	Average rainfall per annum	2200 mm
h)	Wind pressure	97.8 Kg/m ²
i)	Altitude above MSL	to 1000 M

11.0 Dimensions and Reinforcements

The cross-sectional dimensions and the details of pre-stressing wires should conform to the particulars given in Annexure-I, II and III.

The provisions of holes for fixing cross-arms and other fixtures should conform to the REC standards .

12.0 Manufacture

Attire--stressing wires and reinforcements shall be accurately fixed as shown in drawings and maintained in position during manufacture. The un-tensioned reinforcement, as indicated in the drawings, should be held in position by the use of stirrups which should go round all the wires.

All wires shall be accurately stretched with uniform pre-stress in each wire. Each wire or a group of wires shall be anchored positively during casing. Care should be taken to see that the anchorages do not yield before the concrete attains the necessary strength.

13.0 Cover

The cover of concrete measured from the outside of pre-stressing tendon shall be normally 20 Nm.

14.0 Welding and Lapping of Steel

The high tensile steel wire shall be continuous over the entire length of the tendon. Welding shall not be allowed in any case. However, jointing or coupling may be permitted provided the strength of the joint or coupling is not less than the strength of each individual wire.

15.0 Compacting

Concrete shall be compacted by spinning, vibrating, shocking or other suitable mechanical means. Hand compaction shall not be permitted.

16.0 Curing

The concrete shall be covered with a layer of sacking, canvass, Hessian or similar absorbent material and kept constantly wet up to the time when the strength of concrete is at least equal to the minimum strength of concrete at transfer of pre-stress. Thereafter, the pole may be removed from the mould and watered at intervals to prevent surface cracking of the unit, the interval should depend on the atmospheric humidity and temperature.

The pre-stressing wires shall be de-tensioned only after the concrete has attained the specified strength at transfer (i.e., 200 or 210 kg/cm² as applicable). The cubes cast for the purpose of determining the strength at transfer should be cured, as far as possible, under conditions similar to those under which the poles are cured. The transfer stage shall be determined based on the daily tests carried out on concrete cubes till the specified strength indicated above is reached. Thereafter the test on concrete shall be carried out as detailed in IS: 1343 (Code of practice for pre-stressed concrete). The manufacturer shall supply, when required by the owner or his representative, result of compressive test conducted in accordance with IS: 456 (Code of practice for plain and reinforced concrete) on concrete cubes made from the concrete used for the poles. If the owner so desired, the manufacturer shall supply cubes for test purposes and such cubes shall be tested in accordance with IS: 456 (Code of practice for plain and reinforced concrete).

The de-tensioning shall be done by slowly releasing the wires, without imparting shock or sudden load to the poles. The rate of de-tensioning may be controlled by any suitable means either mechanical (screw type) or hydraulic.

The poles shall not be de-tensioned or released by cutting the pre-stressing wires using flames or bar croppers while the wires are still under tension.

Separate eye-hooks or holes shall be provided for handling the transport, one each at a distance of 0.15 times the overall length, from either end of the pole. Eye-hooks, if provided, should be properly anchored and should be on the face that has the shorter dimension of the cross-section. Holes, if provided for lifting purposes, should be perpendicular to the broad face of the pole.

Stacking should be done in such a manner that the broad side of the pole is vertical. Each tier in the stack should be supported on timber sleeper located as 0.15 times the overall length, measured from the end. The timber supported in the stack should be aligned in a vertical line.

Poles should be transported with their broad faces placed vertically and, in such a manner that the shocks are avoided. Supports should be so arranged that they are located approximately at a distance equal to 0.15 times the overall length from the ends. The erection of the pole should be carried out in such a way that the erection loads are applied so as to cause moment with respect to the major axis, i.e., the rope used for hoisting the pole should be parallel to the broader face of the pole.

Earthing

Earthing shall be provided by having length of 8 SWG GI wire embedded in concrete during manufacture and the ends of the wires left projecting from the pole to a length of 100 mm at 250 mm from top and 150 mm below groundlevel.

Earth wire shall not be allowed to come in contact with the pre-stressing wires.

18.0 Transverse Strength Test

Poles made from ordinary Portland cement shall be tested only on the completion of 28 days and poles made from rapid hardening cement only on the completion of 14 days, after the day of manufacture.

The poles may be tested in either horizontal or vertical position. If tested in horizontal position, provisions shall be made to compensate for the overhanging weight of the pole, for this purpose, the overhanging portion of the pole may be supported on a movable trolley or similar device.

The pole shall be rigidly supported at the butt end for a distance equal to the agreed depth of planting.

Load shall be applied at a point 600 mm from the top of the pole and shall be steadily and gradually increased to the design value of the transverse load at first crack. The deflection at this load shall be measured.

A pre-stressed concrete pole shall be deemed not to have passed the test if visible cracks appear at a stage prior to the application of the design transverse load for the first crack.

The load shall then be reduced to zero and increased gradually to a load equal to the first crack load plus 10% of the minimum ultimate transverse load, and held up for 2 minutes. This

procedure shall be repeated until the load reaches the value of 80 per cent of the minimum ultimate transverse load and thereafter increased by 5 per cent of the minimum ultimate transverse load until failure occurs. Each time the load is applied, it shall be held for 2 minutes. The load applied to pre-stressed concrete pole at the point of failure shall be measured to the nearest fivekilograms.

The pole shall be deemed not to have passed the test if the observed ultimate transverse load is less than the design ultimate transverse load.

19.0 Measurement of Cover

After completion of the transverse strength test, the sample pole shall be taken and checked for cover. The cover of the pole shall be measured at 3 points, one within 1.8 meter from the butt end of the pole. the second within 0.6 meters from the top and the third at an intermediate point and the mean value compared with the specified value.

The mean value of the measured cover should not differ by more than (±) 1 mm from the specified cover. The individual values should not differ by more than (±) 3 mm from the specified value.

If these requirements are not met, the workmanship with reference to aligning of the end plates and pre-stressing wires and assembly of moulds should be improved and inspection at pre-production stage tightened suitably.

20.0 Marking

The pole shall be clearly and indelibly marked with the following particulars either during or after manufacture but before testing at a position so as to be easily read after erection in position :

Month and year of manufacture

Transverse strength of pole in Kg

Maker's serial no. and mark and Project.

21.0 Inspection

Inspection may be carried out by the purchaser or third party nominee at any stage of manufacture. The supplier shall grant free access to the purchaser's representative or third party nominee at a reasonable time when the work is in progress. Inspection and acceptance of any equipment under this specification by the purchaser shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specification and shall not prevent subsequent rejection if the equipment is found defective.

SL NO	ITEM	PARAMETERS
1	Type of Pole	9.75 M PSC pole
2	Length of pole	9.75 Mts.
3	Depth of Plantation	1.8 Mts.
4	Bottom Depth	350 mm
5	Top Depth	175 mm
6	Breath	120 mm

Section VI: Technical Specs

7	Diameter of pre-stressing wire	4 mm
8	No. of tensioned wire per pole	22 Nos of 4mm dia.
9	Minimum Ultimate Tensile strength of 4 mm. HT wire	175 KG / SQMM
10	Minimum initial pull of 4 mm wire	1865 kg / wire
11	Spacing HT wires	As per IS : 1343 /1960
12	Quantity of HT wire/ pole	21.45 KG
13	Link & spiral	3.540 KG (4nos ,5 mm in bottom & 4 nos ,5 mm in top
14	M.S spiral	3 mm dia of 150 c/c
15	Maximum Aggregate size	12 mm
16	Total weight per pole	750 KG
17	Minimum clear cover	20 mm
18	Factor of safety	2.5
19	Concrete grade	M-420
20	Ultimate Load	675 KG
21	Earthing shall be provided by 4 MM dia. Galvanized iron wire embedded in concrete	Projecting from the pole at length of 50 MM at 215 from top & 150 MM below ground level
22	one marks to be provided at ground level	at 1.8 M
23	28 days cube strengthof concrete (min)as per IS : 456/2000.	420 Kg / sq.cm.

TECHNICAL SPECIFICATION FOR ACSR CONDUCTORS**A. ACSR CONDUCTOR****1. SCOPE**

This section covers design, manufacture, testing before dispatch, packing, supply and delivery for destination of Kms of “WEASEL” " RABBIT", "RACOON", "DOG", “WOLF” and "PANTHER" ACSR Conductor of size 6/1/2.59mm, 6/1/3.35mm, 6/1/4.09 mm, 6/4.72mm, 7/1.57mm, 30/7/2.59 mm and 30/7/3.00mm respectively.

2. STANDARDS

The Conductor shall also comply in all respects with the IS: 398 (Part-II) - 1996 with latest amendments unless otherwise stipulated in this specification or any other International Standards which ensure equal or higher quality material.

Sl. No.	Indian Standards	Title	International
1	IS:209-1979	Specification for Zinc	BS-3436-1961
2	IS:398-1996	Specification for Aluminum conductors for overhead transmission purposes.	
	Part-II	Aluminum conductors	IEC-209-1966
		Galvanized steel reinforced	BS-215(Part-II)
3	IS:1521-1972	Method of Tensile Testing of Steel wire	ISO/R89-1959
4	IS:1778-1980	Reels and Drums for Bare conductors	BS-1559-1949
5	IS:1841-1978	E.C. Grade Aluminum rod produced by rolling	

6	IS:2629-1966	Recommended practice for Hot Dip Galvanizing of iron and steel	
7	IS:2633-1986	Method of testing uniformity of coating of zinc coated articles.	
8	IS:4826-1968	Galvanized coatings on round steel wires.	ASTM A472-729
9	IS:5484-1978	E.C. Grade Aluminum rod produced by continuous casting and rolling.	
10	IS:6745-1972	Methods of determination of weight of zinc-coating of zinc coated iron and steel articles	BS-443-1969

The ACSR Conductor shall also conform to the following standards: Offer Conforming to standards other than IS-398 shall be accompanied by the English version of relevant standards in support of the guaranteed technical particulars to be furnished as per format enclosed.

3. GENERAL TECHNICAL REQUIREMENTS

The General Technical Requirements are given in Section-II. The Conductor shall conform to these technical requirements.

The Bidder shall furnish guaranteed technical particulars in Section-III.

MATERIALS/WORKMANSHIP

The material offered shall be of best quality and workmanship. The steel cored Aluminum conductor strands shall consist of hard drawn Aluminum wire manufactured from not less than 99.5% pure electrolytic Aluminum rods of E.C. grade and copper content not exceeding 0.04%. They shall have the same properties and characteristics as prescribed in IEC: 889- 1987. The steel wire shall be made from material produced either by the acid or basic open hearth process or by electric furnace process or basic oxygen process. Steel wire drawn from Bessemer process shall not be used.

The steel wires shall be evenly and uniformly coated with electrolytic high grade, 99.95% purity zinc complying with the latest issue of IS-209 for zinc. The uniformity of zinc coating and the weight of coating shall be in accordance with Section-II and shall be tested and determined according to the latest IS-2633 or any other authoritative standard.

The steel strands shall be hot dip galvanized and shall have a minimum zinc coating of 250 gm/sq.m after stranding. The coating shall be smooth, continuous, and of uniform thickness, free from imperfections and shall withstand minimum three dips after stranding in standard prece test. The steel strands shall be preformed and post-formed in order to prevent spreading of strands in the event of cutting of composite core wire. The properties and characteristics of finished strands and individual wires shall be as prescribed in IEC: 888- 1987.

4. CONDUCTOR PARAMETERS

The Parameters of individual strands and composite steel cored aluminium conductor, shall be in accordance with the values given in Section-II.

Creep in a conductor is attributed partly due to settlement of strands and partly due to non-elastic elongation of metal when subjected to load. The manufacturer of conductor shall furnish the amount of creep which will take place in 10, 20, 30, 40 and 50 years along with the supporting calculations. The calculations shall be based on everyday temperature of 32

°C and everyday tension of 25% of UTS of conductor of 11/33 KV Lines.

5. TOLERANCES

The tolerances on standard diameter of Aluminium and Steel wires shall be as detailed in specific technical requirements.

The cross-section of any wire shall not depart from circularity by more than an amount corresponding to the tolerance on the standard diameter.

The details of diameters, lay ratios of Aluminium and steel wires shall be in accordance with the Section-II "TechnicalRequirements".

6. SURFACECONDITIONS

All Aluminum and steel strands shall be smooth, and free from all imperfections, spills/and splits. The finished conductor shall be smooth, compact, uniform and free from all imperfections including spills and splits, die marks, scratches, abrasions, scuff marks, kinks (protrusion of wires), dents, pressmarks, cut marks, wire cross-over, over-riding looseness, pressure and/or unusual bangle noise on tapping, material inclusions, white rust, powder formation or black spots (on account of reaction with trapped rain water etc.), dirt, grit, etc. The surface of conductor shall be free from points, sharp edges, abrasions or other departures from smoothness or uniformity of surface contour that would increase radio interference and corona losses. When subjected to tension upto 50% of the ultimate strength of the conductor, the surface shall not depart from the cylindrical form nor any part of the component parts or strands move relative to each other in such a way as to get out of place and disturb the longitudinal smoothness of the conductor.

7. JOINTS INWIRES

Aluminumwires

During stranding, no Aluminum wire welds shall be made for the purpose of achieving the required conductor length.

No joint shall be permitted in the individual Aluminum wires in the outer most layer of the finished Conductor. However, joints in the 12 wire & 18 wire inner layer of the conductor are permitted but these joints shall be made by the cold pressure butt welding and shall be such that no two such joints shall be within 15 meters of each other in the complete stranded conductor.

Steelwires

There shall be no joints in finished steel wires forming the core of the steel reinforced Aluminium conductor.

8. STRANDING

The wires used in construction of the stranded conductor, shall, before stranding, satisfy all requirements of IS-398 (Part-II) 1996.

In all constructions, the successive layers shall be stranded in opposite directions. The wires in each layer shall be evenly and closely stranded round the underlying wire or wires. The outer most layer of wires shall have a right hand lay. The lay ratio of the different layers shall be within the limits given underSection-II.

9. PACKING

The conductor shall be supplied in non-returnable strong wooden drums provided with lagging of adequate strength constructed to protect the conductor against any damage and displacement during transit, storage and subsequent handling and stringing operations in the field. The drums shall generally conform to IS-1778-1980 and latest version except as otherwise specified hereinafter. The conductor drums shall be adequate to wind one standard length of 2500 meters of WEASEL/RABIT/RACoon/DOG/PANTHERACSRconductor.

The drums shall be suitable for wheel mounting and for letting off the conductor under a minimum controlled tension of the order of 5KN. The conductor drums shall be provided with necessary clamping arrangements so as to be suitable for tension stringing of power conductor.

The bidders shall submit their drawings of the conductor drums along with the bid. After placement of letter of intent the Manufacturer shall submit four copies of fully dimensioned drawing of the drum for Employer's approval. After getting approval from the Employer, Manufacturer shall submit 30 more copies of the approved drawings for further distribution and fielduse.

All wooden components shall be manufactured out of seasoned soft wood free from defects that may materially weaken the component parts of the drums. Preservative treatment for anti-termite/anti fungus shall be applied to the entire drum with preservatives of a quality which is not harmful to theconductor.

All flanges shall be 2-ply construction with 64 mm thickness. Each ply shall be nailed and clenched together at approximately 90 degrees. Nails shall be driven from the inside face of the flange, punched and then clenched on the outer face. Flange boards shall not be less than the nominal thickness by more than 2 mm. There shall not be less than 2 nails per board in eachcircle.

The wooden battens used for making the barrel of the conductor shall be of segmental type. These shall be nailed to the barrel supports with at least two nails. The battens shall be closely butted and shall provide a round barrel with smooth external surface. The edges of the battens shall be rounded or chamfered to avoid damage to theconductor.

Barrel studs shall be used for construction of drums. The flanges shall be holed and the barrel supports slotted to receive them. The barrel studs shall be threaded over a length on either end, sufficient to accommodate washers, spindle plates and nuts for fixing flanges at the requiredspacing.

Normally, the nuts on the studs shall stand protruded of the flanges. All the nails used on the inner surface of the flanges and the drum barrel shall be countersunk. The ends of the barrel shall generally be flushed with the top of thenuts.

The inner cheek of the flanges and drum barrel surface shall be painted with bitumen based paint.

Before reeling, card board or double corrugated or thick bituminized waterproof bamboo paper shall be secured to the drum barrel and inside of flanges of the drum by means of a suitable commercial adhesive material. The paper shall be dried before use. Medium grade craft paper shall be used in between the layers of the conductor. After reeling the conductor the exposed surface of the outer layer of conductor shall be wrapped with thin polythene sheet across the flanges to preserve the conductor from dirt, grit and damage during transportation and handling and also to prevent ingress of rain water duringstorage/transport.

A minimum space of 75 mm shall be provided between the inner surface of the external protective lagging and outer layer of the conductor. Outside the protective lagging, there shall be minimum of two binders consisting of hoop iron/galvanised steel wire. Each protective lagging shall have two recesses to accommodate the binders.

Each batten shall be securely nailed across grains as far as possible to the flange edges with at least 2 nails per end. The length of the nails shall not be less than twice the thickness of the battens. The nail shall not protrude above the general surface and shall not have exposed sharp edges or allow the battens to be released due to corrosion.

The conductor ends shall be properly sealed and secured with the help of U-nails on one side of the flanges.

Only one standard length of conductor shall be wound on each drum. The method of lagging to be employed shall be clearly stated in the tender.

As an alternative to wooden drum Bidder may also supply the conductors in non-returnable painted steel drums. The painting shall conform to IS:9954-1981, reaffirmed in 1992. Wooden/ steel drum will be treated at par for evaluation purpose and accordingly the Bidder shall quote the package.

10. LABELLING AND MARKING

The drum number shall be branded or gauged or stencilled into the flange. An arrow shall be marked on the sides of the drum, together with the words "Roll this way". Each drum shall have the following information provided on the outside of the flange stencilled with indelible ink.

- i) Manufacturer's name and address.
- ii) Contract/Specification number.
- iii) Size and type of conductor.
- iv) Net weight of the conductor.
- v) Gross weight of the conductor and drum.
- vi) Length of the conductor.
- vii) Position of the conductor end.
- viii) Drum and lot number.
- ix) Name and address of the consignee.
- x) Month and year of manufacture.
- xi) The drum may also be marked with standard specification as per which the conductor is manufactured.

11. STANDARD LENGTHS

The standard length of the conductor shall be 2500 metres. Bidder shall indicate the standard length of the conductor to be offered by them. A tolerance of plus or minus 5% on the standard length offered by the bidder shall be permitted. All lengths outside this limit of tolerance shall be treated as random lengths.

Random lengths will be accepted provided no length is less than 70% of the standard length and total quantity of such random length shall not be more than 10% of the total quantity order. When one number random length has been manufactured at any time, five (5) more individual lengths, each equivalent to the above random length with a tolerance of +/-5% shall also be manufactured and all above six random lengths shall be dispatched in the same shipment. At any point, the cumulative quantity supplied including such random lengths shall

not be more than 12.5% of the total cumulative quantity supplied including such random lengths. However, the last 20% of the quantity ordered shall be supplied only in standard length as specified.

Bidder shall also indicate the maximum single length, above the standard length, he can manufacture in the guaranteed technical particulars of offer. This is required for special stretches like river crossing etc. The Employer reserves the right to place orders for the above lengths on the same terms and conditions applicable for the standard lengths during the pendency of the Contract.

12. QUALITY ASSURANCE PLAN

A Quality Assurance Plan including customer hold points covering the manufacturing activities of the material shall be required to be submitted by the tenderer to the Employer along with the tender. The Quality Assurance Plan after the same is found acceptable, will be approved by the Employer.

The contractor shall follow the approved Quality Assurance Plan in true spirit. If desired by the Employer, he shall give access to all the documents and materials to satisfy the Employer that the Quality Assurance Plan is being properly followed.

SECTION - II

SPECIFIC TECHNICAL REQUIREMENTS

1. SCOPE

This section of the specification covers climatic and isoceraunic conditions, specific technical particulars, schedule of requirements & desired deliveries, for conductor for 11/33 kV lines.

2. CLIMATIC & ISOCERAUNIC CONDITIONS:

2.1 Maximum Temperature	
a) Conductor	°C.
2.2 Minimum Temperature	°C.
2.3 i) Max. ambient temperature	°C
ii) Mean annual / every day temperature	°C
2.4 Basic wind speed m/s	
2.5 Relative humidity	
i) Maximum	%
ii) Minimum	%
2.6 Average Rainfall (Max.) mm per annum	
2.7a) Rainy months	May to Sept. 15 Rainy days in a year (days)

CONDUCTOR

1. Conductor:	Raccoon ACSR
2. IS Applicable:	IS-398 (part-II) 1996 latest revision
3. Wire Diameter	Raccoon
Aluminium (mm)	6/4.09
Steel (mm)	1/4.09
4. Number of strands:	

Section VI: Technical Specs

Steel centre	1	
1st steel layer		
1st Aluminium layer	6	
2nd Aluminium layer		
5. Sectional Area of Aluminium (sq. mm.)	78.83	
6. Total Sectional Area(sq.mm.)	91.97	
7. Overall diameter(mm)	12.27	
8. Approximate weight(Kg./Km.)	319	
9. Calculated D.C resistance at 20 degrees C., maximum. (Ohms/Km)	0.371	
10. Ultimate tensile strength (KN)	26.91	
11. Final modulus of elasticity (GN/sq.m)	79	
12. Coefficient of linear expansion x 10 ⁻⁶ per°C	19.1	
13. Lay ratio	Max /Min	
Steel core 6 wire layer		
Aluminium1st layer	14	
2 nd layer	10	
14. Technical Particulars		
a. Diameter-mm	Al	Steel
Standard(mm)	4.09	4.09
Maximum (mm)	4.17	4.17
Minimum (mm)	4.01	4.01
b. Cross-sectional area of nominal diameter wire (mm ²)	13.14	13.14
c. Weight (Kg./Km)	102.48	35.51
d. Min. breaking load (KN)		
Before stranding	17.27	2.08
After Stranding	16.4	1.98
e. D.C resistance at 20°C min. (Ohm/Km)	0.371	

15. Zinc coating of steelcore:

(i) Number of 1minutedips: 3

- (ii) Minimum weight of Zinc: 260 gms/sqm Coating
- (iii) Process of Galvanizing: Hotdip.
- (iv) Quality of Zinc: IS-209/1979 or latest edition.

16. Joints in strands

Steel : Not permitted

Aluminium: No joint shall be permitted in the Aluminium wires in the outer most layer of the ACSR conductor. But permitted in the inner layers such that no two such joints are within 15 meters of each other in the complete stranded conductor.

17 Chemical composition of high carbon steel wire:

Element	% Composition
i) Carbon	0.5 to 0.85
ii) Manganese	0.5 to 1.10
iii) Phosphorus	Not more than 0.035
iv) Sulphur	Not more than 0.045
v) Silicon	0.10 to 0.35

TECHNICAL SPECIFICATION FOR P.G CLAMP FOR AAA RACCOON /WOLF CONDUCTOR

1.0 Scope:

The scope covers design, manufacturing, testing at work, transport at site, insurance, storage, erection and commissioning of P.G. Clamp suitable for Conductor size Wolf/Raccoon/Weasel/3 Bolt Type strictly conforming to the following standards:

Standards:

- P.G. Clamps suitable for conductor size, wolf/raccoon/weasel 3 bolt types strictly conforming to IS : 2121 and galvanizing conforming to IS: 2633 or equivalent international specifications as per the following:
- P.G. clamp body to be made from aluminium alloy
- Clamps nuts and bolt and washer should be made of hot deep galvanized steel
- Spring washer be made of electro-galvanize special steel.

Style No.	Conductor or	Maximum conductor diameter in mm	Dimensions					No of Bolts	Approx. Weight Kg.
			A mm	B mm	C mm	D mm	E mm		
A-83	Wolf	20.78	140	76	42	5/8	1	3	0.51
A-81	Raccoon	14.45	95	57	30	1/2	2	2	0.18

3.0 Inspection may be carried out by the purchaser or third party nominee at any stage of manufacture. The

supplier shall grant free access to the purchaser's representative or third party nominee at a reasonable time when the work is in progress. Inspection and acceptance of any equipment under this specification by the purchaser shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specification and shall not prevent subsequent rejection if the equipment is found defective.

TECHNICAL SPECIFICATION FOR CAST IRON EARTH PIPE

1.0 Scope

This specification covers design, manufacture, testing, transport to site, insurance, storage, erection and commissioning of the cast iron earth pipe for use on line & substation as earthing pipe

2.0 Standard

The Earth pipe shall comply with the Indian Standard specification IS: 1729/1964 and as amended from time to time except where they conflict with the specific requirements in this specification.

3.0 Manufacture

Metal used for the manufacture of pipes shall be good quality cast iron.

Casting shall be stripped with all precautions necessary to avoid wrapping and shrinkage defects. They shall be free from defects which effect the use of castings. By agreement between the purchaser and the manufacturer, minor defects may be rectified.

Pipes shall be such that they could be cut, drilled or machines.

Bolts, nuts & washers shall be made of Steel and well galvanized. The bolts shall be of 200 mm length, 16 mm diameter with 2(two) nos. plain washers, one locknut & one check nut. Threaded length of the bolts should be 50 mm.

4.0 Sizes

Dimensions of pipe & socket shall be conform to the sizes shown below and as per drawing enclosed:

Nominal length of the pipe with socket	1800 mm
Nominal diameter of pipe	100 mm
External diameter of pipe	110 mm
Thickness of pipe	5 mm
Projection of spigot bead	3 mm
Width of spigot bead	15 mm
Internal dia of socket	129 mm
Thickness of socket	6 mm
Internal depth of socket	70 mm
Internal Radius of socket	5 mm
Width of grooves of socket	10 mm
External dia of grooves socket	155 mm
Depth of grooves of socket	5 mm
Nominal weight of pipe (Exclusive of ear)	21.67 Kg

5.0 Tolerance

The Tolerance of the 100 mm nominal diameter pipe shall be ± 3.5 mm

The Tolerance of pipe thickness shall be - 15 percent

The Tolerance of length of the pipe shall be ± 20 mm

The Tolerance of weight of the pipe shall be - 10 Percent

Pipes weighing more than the nominal weight may be accepted provided they comply in every other respect with the requirements of this standard.

TEST

Hammer test: Each pipe when tested for soundness by striking with a light hand hammer shall emit a clear ringing sound

Hydraulic test : If so required by the purchaser, pipe shall be tested hydraulically at a pressure of 0.4 kg/cm^2 without showing any sign of leakage, sweating or other defect of any kind. The pressure shall be applied internally and shall be maintained for not less than 15 seconds. The tests shall be conducted before coating of pipe.

7.0 Inspection

All tests and inspection shall be carried out at the place of manufacturers unless otherwise agreed by the purchaser and the manufacturer at the time of purchase. A manufacturer shall afford the inspector representing the purchaser or third party nominee all reasonable facilities without charge to satisfy that the materials are being purchased as per specification. The purchaser reserves the right to have the test carried out at his cost by an independent agency, whenever there is dispute regarding the quality of materials supplied. All incoming consignment shall be checked at stores.

8.0 Coating

Normally pipes, unless specially ordered, shall be supplied free of coating on surfaces.

9.0 Marking

Each pipe shall have the Trade mark of the manufacturer and nominal size suitably marked on it. The pipe marked with the ISI certificate mark, shall be preferred. The equipments shall be marked with name of manufacturer, year and name of project.

TECHNICAL SPECIFICATION FOR STAY SET (HT)

1. Scope:

This specification covers the design, manufacture testing at manufacturer's works, transport to site, insurance, storage, erection and commissioning of the Stay Sets (HT) required from the distribution lines at designated locations.

2.0 Standard:

All the materials of stay sets shall comply in all respects with the requirements of the latest edition of the relevant Indian or British Standard specification except in so far as they are modified this specification.

3.0 Design Consideration:

Stay Rods shall be galvanized and shall be of circular Cross-section with bow, thimble, nuts and bolts. The Rods shall be threaded at one end up to a minimum of 30 cm length and shall be complete with Galvanized M.S. Anchor Plates with all necessary accessories. All parts shall be heavily galvanized.

4.0 Testing:

Type and Routine Tests should be carried on different components of each stay sets as per relevant Indian Standard specification and certified copies of the above should be submitted along with the tender.

5.0 Schedule Requirement:

Stay sets complete with Thimble bow stay Rod/Anchor plate with nuts etc. and made of Rolled mild Steel Rod and plates as per detailed given below:

A) Anchor Plate:

- II) Thickness not below 5 mm.
- III) Size not below 300 mm X 300 mm with smooth edges (for HT)
- IV) Well galvanized
- V) Materials M.S. Rolled plate
- VI) About 20 mm square hole at centre for locking the plate with the Anchor Rod (for HT)

A) Anchor Rod:

- 2.1 Length 1800 mm or above
- 2.2 Threaded length 30 cm or above
- 2.3 Diameter 18 mm or above (for HT)
- 2.4 Anchor plate and head: square size 30mm X 30mm with thickness 25 mm having matching square size shank for locking the Anchor plate.
- 2.5 One ratched lock nuts, grooves must match the grooves at bow flange
- 2.6 One check nut.
- 2.7 Materials H.S.
- 2.8 Component well galvanized with extra care for the threaded portion.
- 2.9 Both lock and check nuts should be matching to the Anchor Rod thread such that punching of thread after assembly at site safeguards them against removal.

B) **Thimble:** The match bow diameter and bend should be well galvanized.

C) **Bow:** Rod diameter 12mm/16mm or above overall length 35cm/40cm or above. Flange with well formed locking grooves matching the locking nut, bow ends will be riveted securely with the flange. All items to be galvanized.

6.0 Inspection:

All tests and inspections shall be carried out at the place of manufacturer unless otherwise agreed by the purchaser and the manufacturers at the time of purchase. A manufacturer shall afford the inspector representing the purchaser or third party nominee, all reasonable facilities, without charge to satisfy that the

materials are being purchased as per specification. The purchaser reserves the right to have the test carried out at his cost by an independent agency, whenever there is dispute regarding the quality of the materials supplied.

- 7.0 **Marking** The equipments shall be marked with name of manufacturer, year and name of project.

TECHNICAL SPECIFICATION FOR G.I. STAY WIRE

- 1.0 **Scope** :The specification covers design, manufacturing and testing, transporting to site, insurance, storage, erection and commissioning of G.I. Stay Wire 7/10SWG and 7/14SWG.

- 2.0 **Materials.** The wire shall be manufactured from steel, made by any suitable process and shall not contain sulphur and phosphorus exceeding 0.065 percent each.

The wires shall be coated with Zinc Grade Zn 98 of IS:209-1966

The general requirements for the supply of Galvanized stay strand shall be in accordance with IS:1387-1967

7.0 **Construction**

- 7.1 Grades: The wire shall be of Grade-I and tensile strength range 45 up to and including Kg/mm
- 7.2 The Galvanized stay strand shall be of 7/2 mm and 7/3.15 mm. the lay of the strands shall be of the length of 7/2 mm and Tables-I of IS: 2141-1963. the wires shall be so stranded together that when and evenly distributed pull is applied at the end of the completed strand each wire will take equal share of the pull.
- 7.3 The length of the strand which may be supplied without joints in the individual wires comprising it, depend on the length of wire which may be carried by the bobbin in a normal stranding machine. The normal lengths of strand which shall be supplied without joints in the individual wires, excluding welds made in the rod before drawing shall be as given below. The lengths may be exceeded by agreement between the manufacturer and the purchaser.

Diameter of wire in strand	Normal length without joints of weld
3.15 mm	1000 M
2.0 mm	3000 M

- 7.4 In cases where joints are permitted, they shall be made by welding or brazing joints in the same wire shall be separated by a length of not less than that shown in 3.3 and joints in different wires in a strand shall not be less than 20 M apart.

8.0 **Freedom from Defects :**

- 8.1 Each coil shall be warranted to contain no weld joint or splice other than in the rod before it is drawn and those permitted in 3.4. The wire shall be circular and shall be free scale, irregularities imperfections flaws splits and other defects. The Zinc coating shall be smooth, even the bright.

9.0 **Tests:**

- 9.1 Chemical Analysis: Unless otherwise agreed to between the purchaser and the supplier, the chemical analysis be carried out.
- 9.2 Tensile Test: The wire when tested in accordance with IS: 1521-1960, on gauge length of 100 mm shall have the minimum tensile strength specified in Tables 1 of IS : 2141/1968 according to the grade of the wire.
- 9.2.1 The tensile strength of the finalized strand shall be not less than 93% of the aggregate of the single wires.
- 9.3 Delivery test: The wire shall be subjected to the wrapping test in accordance with IS: 1755/1961. When wrapped eight times round its own diameter and on being subsequently strengthened the wire shall not break or split.
- 9.3.1 Coating test: The uniformity of Zinc coating shall be tested by the method specified in IS: 2633/1964. The wire shall withstand the number or dips as specified in IS: 4826-1968.

10.0 Marking:

10.1 Each coil shall be provided with a label, fixed firmly on the inner part of the coil, bearing 'the following information.

- a. Manufacturer's name or trade mark
- b. Lot number and coil number
- c. A brief description and quality of the materials.
- d. Weight and
- e. Any other particulars specified by the purchaser
- f. Name of the project.

10.2 The label may also be marked with the ISI certification mark.

11.0 Inspection: The test should be carried out in presence of the inspecting officer deputed by purchaser or third party nominee and the test should be in conformity with relevant IS.

TECHNICAL SPECIFICATION OF HT GUY INSULATOR

Scope

This specification covers design, manufacture, testing, transport to site, insurance, storage, erection and commissioning of the strain type porcelain Guy Insulator used in distribution overhead power lines.

1.0 Standard

This insulators shall comply with Indian Standard specification IS: 5500/1969 and as amended from time to time except where they conflict with the requirements in this specification.

Offers conforming to any other internationally accepted standard which ensure equal or higher quality than the standard mentioned will be acceptable.

2.0 General Requirements

- 3.0 This porcelain shall be sound, free from defects, thoroughly vitrified and smooth glazed.

The design of the insulator shall be such that stresses to expansion and contraction at any part of the insulator shall not load to its deterioration.

The glaze, unless otherwise specified, shall be brown in colour. The glaze shall cover the entire porcelain surface parts except those areas that serves as supports during firing or area otherwise required to be left unglazed.

4.0 Insulator Characteristics

The Guy Strain Insulators shall have the electrical and mechanical characteristics as shown below:

H.T. Strain Type Porcelain Guy Insulator

- | | | |
|----|--|-------------|
| 1) | Length | 140 mm |
| 2) | Diameter | 85 mm |
| 3) | Cable hole dia | 25 mm + 1.5 |
| 4) | Minimum failing load | 88 KN |
| 5) | Creepage distance | 48 mm |
| 6) | Dry one minute power frequency withstand 27 KV (rms) voltage | |
| 7) | Wet one minute power frequency withstand 13 KV (rms) voltage | |

5.0 Test

All insulators shall comply the following test as per IS : 5300

A) Routine test:

The following shall be carried out as., routine test.

a) Visual Examination

Every insulators shall be visually examined. The insulators shall be free from physical distortion of shape and defects, and thoroughly verified and smoothly glazed. They should be free from cracks or any other defects likely to be prejudicial to the satisfactory performance in service.

b) Type test:

The following shall constitute the type test and those shall be conducted in the order given below:

- i. Visual examination

- ii. Verification of dimensions
- iii. Temperature cycle test
- iv. Dry one minute power frequency voltage withstand test
- v. Wet one minute power frequency voltage withstand test
- vi. Mechanical strength test
- vii. Porosity test.

The number of samples for type test are to be agreed to between the purchaser and the supplier.

c) Acceptance Test (to be conducted in the following order)

- i. Verification of Dimensions
- ii. Temperature cycle test
- iii. Mechanical strength test
- iv. Porosity test

The number of samples for acceptance test shall be in accordance to IS: 5300.

- d) Type test certificate from National Test House/ Govt. recognized institutions/ Govt. recognized public Testing Laboratories are also to be submitted along with the offer, failing which the offer is liable for rejection.

6.0 Marking

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

- a. Name of trade mark of the manufacturer
- b. Year of manufacture and name of project

Marking on porcelain shall be printed and shall be applied before firing. Insulators may also be marked with the ISI certification mark.

7.0 Inspection

All tests and inspections shall be carried out at the place of manufacturer unless otherwise agreed by the purchaser and the manufacturer at the time of purchase. The manufacturer shall afford the inspector representing the purchaser or the third party nominee, all reasonable facilities, without charge, to satisfy that materials are being furnished in accordance with the specification. The purchaser reserves the right to have the test carried out at his own cost by an independent agency whenever there is dispute regarding the quality of materials supplied.

8.0 Drawing

Drawing specifically showing all dimensions is to be submitted along with technical bid

**TECHNICAL SPECIFICATION FOR COMPOSITE POLYMERIC INSULATORS FOR
USE IN 11KV AND 33 KV SYSTEM**

SCOPE

This section covers the specifications for design, manufacture, shop & laboratory testing, supply before dispatch & supply of Composite polymeric insulator consisting of a load bearing cylindrical insulating solid core consisting of fibres usually glass in a resin based matrix, a housing (outside the insulating core) made of polymeric material and end fittings permanently attached to the insulating core for a.c system with a nominal voltage greater than 1000 V for overhead lines.

The Composite insulator shall be pin insulator for straight line location and Long rod insulator for conductors in tension application at angle/ cut point. The composite tension / suspension insulator shall be of suitable for boll and socket type or tongue & Clevis type fittings.

- 1. APPLICABLE STANDARD:** Following international standard are applicable for composite polymeric insulation with latest amendment and other relevant national & internal standard also been application with latest amendment.

The composite insulators including the end fitting connection shall be of standard design suitable for use with the hardware fittings of any make conforming to relevant IEC/IS standards.

Sl. No	Indian Standard	Title	International Standard
1.	IEC	Definition, test method and acceptance criteria for composite insulators for a. c. overhead lines above.	IEC:61109
2.	IS:731	Porcelain insulators for overhead power lines with a nominal voltage greater than 1000V	IEC:60383
3.	IS:2071	Methods of High voltage testing	IEC:60060-1
4.	IS:2486	Specification for insulator fitting for overhead power lines with a nominal voltage greater than 1000V General Requirements and tests Dimensional Requirements locking devices.	IEC:6012 0 IEC:6037 2
5.		Thermal mechanical performances test on string insulator units.	IEC:60575
6.	IS:13134	Guide for the selection of insulators in respect of polluted conditions.	IEC:60815
7.		Characteristics of string insulator units of the long rod type.	IEC:60433
8.		Hydrophobicity classification	STRI GUIDE 1.92/1
9.		Radio interference characteristics of overhead power lines and high-voltage equipment	CISPR:18-2 PART2
10.	IS:8263	Methods of RI test of HV insulators	IEC:60437
11.		Standard for insulators- composite distribution dead end type	ANSI c29.13-2000
12.	IS:4759	Hot dip Zinc coatings on structural steel & other allied products.	ISO:1459 ISO:1461
13.	IS:2629	Recommendation of weight for hot, dip galvanization for iron and steel	ISO:1461(E)
14.	IS:6745	Determination of weight of Zinc coatings on zinc coated iron and steel articles	ISO:1460

15.	IS:3203	Method of testing of local thickness of electroplated coating	ISO:2178
16.	IS:2633	Testing of uniformity of coating of zinc coated articles	
17.		Standard specification for glass fiber standards	ASTM D 578-05
18.		Standard test method for compositional analysis of thermogravimetry	ASTME 1131- 03
19.	IS:4699	Specification for refined secondary Zinc	

2. SERVICECONDITION

Maximum ambient temperature : *48⁰ C

Minimum ambient temperature : - 5⁰ C

Relative humidity : 0

to 100%

The size of composite insulator, minimum creepage distance and mechanical strength along with hardware fittings shall be as follows.

3. TERMS AND DEFINITION:

- I. The polymeric insulator whose insulating body consists of organic base materials also known as non ceramic insulator and coupling device should be attached to the end of the insulating body.
- II. The composite polymeric insulator should be made two insulating part- namely a core and a housing part. The core consisting of fibres (e.g glass) which are position in a resin based matrix or a homogeneous insulating material (resin)
- III. The insulator trunk which is the central insulating part of an insulator from which the sheds project.
- IV. The housing which is the external insulating part of a composite insulator providing the necessary creepage distance and protecting core from environment.
- V. The shed of the insulator which is the insulating part projecting from the insulator trunk , intended to increase the creepage distance.
- VI. The interface which is the surface between housing and fixating device, between various parts of the housing e.g between shed or between sheath and shes, between core and housing.
- VII. The end fitting which provide integral component or formed part of an insulator intended to connect it to a supporting structure , or to a conductor or to an item of equipment or to another insulator.

S I. N o.	Type of compo site insulat or	Nomi nal syste m volta ge KV (rms)	Highes t system voltage KV (rms)	Visible dischar ge test voltage KV (rms)	Wet power freque ncy withst and voltage KV (rms)	Impuls e withst and voltage KV (rms)	Minimum Creepage distance (mm)		Min. Failin g load KN	Pin ball shank diam eter mm
							Norma l & moder ately pollute d (20mm/ KV)	Heav ily pollu ted (25m m/ K V)		
i	Long rod insula	11	12	9	3 5	75	240	32 0	45	16
		33	36	2 7	7 5	170	720	90 0	45/70**	

	tor									
ii	Post/ pin insula tor	11	12	9	3	75	240	32	5	
		33	36	2	7	170	720	90	10	

Dimensional Tolerance of composite insulators

$\pm(0.04d=1.5)$ mm when $d < 300$ mm

$\pm(0.025d=6)$ mm when $d < 300$ mm

4. Interchangeability

The composite insulators including the end fitting connection shall be of standard design suitable for use with the hardware fittings of any make conforming to relevant IEC/IS standards.

5. Corona and RI performance

All surfaces shall be clean, smooth without cuts, abrasions or projections. No parts shall be subjected to excessive localized pressure. The insulator and metal parts shall be so designed and manufactured that it shall avoid local corona formation and not generate any radio interference beyond specified limit under the operating conditions.

6. Core

It shall be a glass – fiber reinforce epoxy resin rod of high strength (FRP rod). Glass fibers and resin shall be optimized in the FRP rod. Glass fibers shall be Boron free electrically corrosion resistant (ECR) glass fiber or boron free E- class and shall exhibit both high electrical integrity and high resistance to acid corrosion . the matrix of the FRP rod shall be Hydrolysis resistant. The FRP rod shall be manufactured through pultrusion process. The FRP rod shall be voidfree.

Housing (Sheath)

The FRP rod shall be covered by a seamless sheath of a silicon elastomeric compound or silicon alloy compound of a thickness of 3 mm minimum.

It should protect the FRP rod against environment influences, external pollution and humidity. It shall be excluded or directly moulded on the core and shall have chemical bonding with the FRP rod. The strength of the bond shall be greater than the tearing strength of the polymer. Sheath material in the bulk as in the sealing/ bonding area shall be free from voids.

7. Weathersheds

The composite polymer weather sheds made of silicon elastomeric compound of silicon alloy shall be firmly bounded to the sheath, vulcanized to the sheath or moulded as part of the sheath and shall be free from imperfections. The weather sheds should have silicon content of minimum 30% by weight. The strength of the weather sheds to sheath interface shall be greater than the tearing strength of the polymer. The interface, if any, between sheds and sheath (housing) shall be free from voids.

8. EndFittings

End fittings transmit then mechanical load to the core. They shall be made of spheroid graphite cast iron, malleable cast iron or forged steel or aluminium alloy. They shall be connected to the rod by means of a controlled compression technique. The gap between fitting and sheath shall be sealed by a flexible silicon elastomeric compound or silicon alloy compound sealant. System of attachment of end fitting to the rod shall provide superior sealing performance between housing, i.e. seamless sheath and metal connection. The sealing must be moisture proof.

The dimensions of end fittings of Insulators shall be in accordance with the standard dimensions stated in IS:2486/IEC:60120

9. EquipmentMarking

- i. Each insulator unit shall be legibly and marked with the following details as per IEC-61109

(a) Month & Year of manufacture

(b) Min. Failing load/ guaranteed mechanical strength in kilo Newton followed by the word KN to facilitate easy identification.

(c) Manufacture's name / trademark.

- ii. One 10mm thick ring or 20mm thick spot of suitable quality of paint shall be marked on the end fitting of each composite long rod of [particular strength in case of 33 KV insulators for

identification in case both type of insulators are procured by the utility. The paint shall be not have deteriorating effect on the insulator performance, following codes shall be used as identification mark:

- For 45 KN Long unit : Blue
For 70 KN Long unit : Red

10. Bid Drawings

- I. The full description and illustration of the material offered.
- II. The bidder furnish along with the bid the outline drawing (3 copies) of each insulator unit including a cross sectional view of the long rod insulator unit. The drawing shall include but not be limited to the following information.
 - (a) Long rod diameter with manufacturing tolerance.
 - (b) Minimum creepage distance with positive tolerance.
 - (c) Protected creepage distance.
 - (d) Eccentricity of the long rod unit
 - (i) Axial runout
 - (ii) Radial runout
 - (e) Unit mechanical and electrical characteristics
 - (f) Size and weight of ball and socket/ tongue & cleaves
 - (g) Weight of composite long rod units
 - (h) Materials
 - (i) Identification Mark
 - (ii) Manufacturer's catalogue number

Typetests

Sl. No.	Description of type test	Test procedure / standard
1.	Dry lightning impulse withstand voltage test	As per IEC 61109 (Clause 6.1)
2.	Wet power frequency test	As per IEC 61109 (Clause 6.2)
3.	Mechanical load- time test	As per IEC 61109 (Clause 6.4)
4.	Radio Interference test	As per IEC 61109 (Clause 6.5) revised
5.	Recovery of Hydrophobicity test	Annexure-B This test may be repeated every 3 yrs by the manufacturer
6.	Chemical composition test for silicon content	Annexure-B or any other test method acceptable to the owner
7.	Brittle fracture resistance test	Annexure-B

11. Acceptance (Sample) Tests

A. For Composite Insulators

A	Verification of dimensions	Clause 7.2 IEC:61109
B	Verification of the locking system (if possible)	Clause 7.3 IEC:61109
C	Galvanizing Test	IS 2633 / IS 6745
D	Verification of the specified mechanical load	Clause 7.4 IEC:61109

B. Routine Tests

Sl. No.	Description	Standard
1.	Identification of marking	As per IEC:61109 Clause 8.1
2.	Visual Inspection	As per IEC:61109 Clause 8.2
3.	Mechanical routine test	As per IEC:61109 Clause 8.3

C. Tests During Manufacture

Following tests shall also be carried out

A	Chemical analysis of zinc used for galvanizing
B	Chemical analysis, mechanical, metallographic test and magnetic particle inspection for malleable castings

**TECHNICAL SPECIFICATION FOR HARDWARE FITTING FOR DISC INSULATOR, 90 KN
(B&S)**

1.0 Scope: -

This specification covers design, drawings, and manufacture, testing at manufacturers' works, supply and delivery of hardware fittings for strain insulator of ball & socket type.

The fitting shall consist of the following component:

- a) Cross arm strap conforming to IS: 2486 (Pt-II)-1989.
- b) Forged steel ball eye for attaching the socket end of the strain insulator to the cross arm strap. Forging shall be made of steel as per IS : 2004-1978.
- c) Aluminium alloy thimble socket made out of permanent mould cast , high strength aluminium alloy for attaching to the strain insulator on one end and for accommodating the loop of the helically formed dead-end fittings at the other end in its smooth internal contour. The thimble socket shall be attached to the strain insulator with the help of locking pin as per the dimension given in IS: 2486(Pt-II)-1989
- d) Helically formed dead-end grip having a pre-fabricated loop to fit ito the grooved contour to the thimble on one end and for application over the conductor at the other end. The formed fitting shall conform to the requirement of IS:12048-1987.

2.0 Tests:

The helically formed fittings for strain insulators shall be subjected to tests as per IS:12048-1987. The other hardware fittings shall be tested as per IS:2486 (Part-I)

3.0 Packing:

For packing of strain clamps and related hardware, double gunny bags or wooden cases shall be used. The fittings shall be properly protected against damage.

The gross weight of the packing shall not normally exceed 50 Kg. Helically formed fittings shall be packed in card board / wooden boxes. Fittings for different sizes of conductors shall be packed in different boxes and shall be complete with their minor accessories fitted in place and colour codes on tags / fittings shall be marked to identify suitability for different sizes of conductors as per IS:12048-1987

4.0 Inspection:

All tests and inspections shall be made at the place of manufacture unless otherwise especially agreed upon by the manufacturer and purchaser at the time of purchase. The manufacturer shall afford the inspector representing the purchaser all reasonable facilities, without charge, to satisfy him that the material is being furnished in accordance with this specification.

The purchaser has the right to have the tests carried out at his own cost by an independent agency whenever there is dispute regarding the quality of supply.

TECHNICAL SPECIFICATION FOR G.I. WIRE

1.0 **Scope**

This specification covers the manufacturing, testing at works, transport to site, insurance, storage, erection and commissioning of Galvanized Iron Wire of sizes 4 mm and 5 mm diameter.

2.0 **General requirements**

It relating to the supply of mild steel wire shall be as per IS: 1387/1967 and the wire shall be drawn from the wire rods conforming to IS: 7887/1975.

The requirements for chemical composition for the wires shall conform to IS:7887/1975.

Mild steel wire for General Engineering purpose shall be of following sizes:

- I) 4mm - diameter (8 SWG)
- II) 5mm - diameter (6 SWG)

Tolerance permitted on the diameter of wire shall be as per Table -1 of IS:280/1978.

3.0 **Climatic Conditions** The cross arms should be suitable for the climatic condition mentioned In these bidding documents:

4.0 **Mechanical Properties**

4.1 Tensile Test: Tensile strength of wire when tested in accordance with IS: 1521-1972, shall be within the limits given in Table-2 of IS: 280/1978.

4.2 Wrapping Test: Wires shall be subjected wrapping test in accordance with IS: 1755-1961. The wire shall withstand without breaking or splitting. being wrapped eight times round its own diameter and subsequently straightened.

Surface finish

- a. The wire shall have galvanized finishes. The galvanized coating of steel wire shall conform to the requirements for anyone of the types of coatings given in IS: 4826-1968 as per agreement with the purchaser.
- b. The coating test for finishes other than galvanized, copper coated or tinned shall be subject to between the purchaser and the manufacturer.
- c. Unless otherwise agreed to the method of drawing representative samples of the material and the criteria for conforming shall be as prescribed in Appendix (A) of IS: 280/1978.
- d. All finished wires shall be well and cleanly drawn to the dimensions specified. The wire shall be sound, free from splits, surface flaws, rough jagged and imperfect edges and other harmful surface defects.
- e. Each coil of wire shall be suitably bound and fastened compactly and shall be protected by suitably wrapped.

5.0 **Marking** Each coil of wire shall be marked legibly with the finish size of wire, lot number and trade mark of the name of the manufacturer. The material may also be marked with the ISI certification mark and name of the project.

6.0 **INSPECTION:** Inspection may be carried out by the purchaser or third party nominee at any stage of manufacture. The supplier shall grant free access to the purchaser's representative or third party nominee at a reasonable time when the work is in progress. Inspection and acceptance of any equipment under this specification by the purchaser shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specification

TECHNICAL SPECIFICATION FOR GALVANIZED CHANNEL CROSS ARMS

1.0 **Scope :**

This specification covers the design, manufacture, testing at manufacturer's works, transport to site, insurance, storage, erection and commissioning of Galvanized Cross Arm and Channel used for 11 KV line complete with all accessories as specified.

2.0 Standards

The M.S Cross Arm and channel supplied under this specification shall conform to the latest issue of the relevant Indian Standards IS – 226:1975, Regulations etc. except where specified otherwise.

The rolling and cutting tolerance for steel product conforming to IS: 266 shall be those specified in the IS: 1852-1973 with latest revision.

Galvanization conforming to latest version of IS:2629 or equivalent international specifications

In the event of conforming to any standards other than the Indian Standards, the salient features of comparison shall be clearly set out separately.

3.0 General requirement :

- i. The cross arm shall be fabricated grade of mild steel of channel section as per requirement.
- ii. All steel members and other parts of fabricated material as delivered shall be free of warps, local deformation, unauthorized splices, or unauthorized bends.
- iii. Bending of flat strap shall be carried out cold. Straightening shall be carried out by pressure and not by hammering. Straightness is of particular importance if the alignment of bolt holes along a member is referred to its edges.
- iv. Holes and other provisions for field assembly shall be properly marked and cross referenced. Where required, either by notations on the drawing or by the necessity of proper identification and fittings for field assembly, the connection shall be match marked.
- v. A tolerance of not more than 1mm shall be permitted in the distance between the center lines of bolt holes. The holes may be either drilled or punched and, unless otherwise stated, shall be not more than 2mm greater in diameter than the bolts.
- vi. When assembling the components force may be used to bring the bolt holes together (provided neither members nor holes are thereby distorted) but all force must be removed before the bolt is inserted. Otherwise strain shall be deemed to be present and the structure may be rejected even though it may be, in all other respects, in conformity with the specification.
- vii. The back of the inner angle irons of lap joints shall be chamfered and the ends of the members cut where necessary and such other measures taken as will ensure that all members can be bolted together without strain or distortion. In particular, steps shall be taken to relieve stress in cold worked steel so as to prevent the onset of embitterment during galvanizing.
- viii. Similar parts shall be interchangeable.
- ix. Shapes and plates shall be fabricated and assembled in the shop to the greatest extent practicable. Shearing flame cutting and chipping shall be done carefully, neatly and accurately. Holes shall be cut, drilled or punched at right angles to the surface and shall not be made or enlarged by burning. Holes shall be clean-cut without torn or ragged edges, and burrs resulting from drilling or reaming operations shall be removed with the proper tool.
- x. Shapes and plates shall be fabricated to the tolerance that will permit fielderection within tolerance, except as otherwise specified. All fabrication shall be carried out in a neat and workmanlike manner so as to facilitate cleaning, painting, galvanizing and inspection and to avoid areas in which water and other matter can lodge.
- xi. Contact surfaces at all connections shall be free of loose scale, dirt, burrs, oil and other foreign materials that might prevent solid seating of the parts.
- xii. Welded joints not permissible.
- xiii. The rolling and cutting tolerance for steel product conforming to IS: 266 shall be those specified in the IS: 1852-1973 with latest revision.
all dimensions are subject to the following tolerances:
a) dimensions up to and including 50mm:+1mm: and
b) dimensions greater than 50mm: +2%
- xiv. The channel cross arm shall be properly brushed to make it free from rust.

xv. For galvanized channel :

All ferrous parts including all sizes of nuts, bolts, plain and spring washers, support channels, structures, shall; be hot dip galvanized conforming to latest version of IS:2629 or any other equivalent authoritative standard. The zinc coating shall be smooth, continuous and uniform. It shall be free from acid spot and shall not scale, blister or be removable by handling or packing. There shall be no impurities in the zinc or additives to the galvanic bath which could have a detrimental effect on the durability of the zinc coating. Before picking, all welding, drilling, cutting, grinding and other finishing operations must be completed and all grease, paints, varnish, oil, welding slag and other foreign matter completely removed. All protuberances, which would affect the life of galvanizing shall also be removed.

The weight of zinc deposited shall be in accordance with that stated in Standard IS 2629 and shall not less than 0.61kg/m² with a minimum thickness of 86 microns for items of thickness more than 5mm, 0.46kg/m² (64 microns) for items of thickness between 2mm and 5mm and 0.33kg/m² (47 microns) for items less than 2mm thick.

- xvi. The raw materials and fabrication thereof in respect of cross arm shall be furnished along with dimension.

- xvii. The hole for fixing of insulator and pole clamp shall be provided as per requirement.
 xviii. One copy of the drawing of cross arm for each size shall be furnished along with the technical bid.

a. REQUIRED TECHNICAL SPECIFICATION FOR GI CHANNEL CROSS ARM

[100 x 50x 50x6 x 2200]

SI No.	Description	Particular
1	Type of cross arm	GI Channel cross arm
2	Size	100 x 50x 50x6 x 2200 mm
3	Material	Mild Steel channel(galvanized)
4	Length	2200 mm
5	Breath	100 mm
6	Width	50 mm
7	Thickness	6 mm
8	Hole for foxing of insulator	20 mm
9	Center to center distance for hole	1070mm
10	Weight	20.5 kg (approx)
11	Galvanization	The cross arm shall be properly brushed to make it free from rust and hot dip galvanized confirming to IS: 2629 or equivalent international specifications.

TECHNICAL SPECIFICATION FOR 11 KV T-CROSS ARM

SI No.	Description	Particular
1	Type of cross arm	11 KV T-cross arm
2	Applicable standard	IS – 226:1975 & IS 1852/1973
3	Material	Mild Steel channel
4		50 mm
5	Width	50 mm
6	Thickness	6 mm
7	Diameter of hole for Pole fixing	18 mm
8	Diameter of hole for G.I Pin	22mm
9	For Fixing of Pin insulator	A piece of 76mm length 50x50x6 mm angle or flat of 50x6mm is to be welded at the ends of cross arm for fixing of pins firmly & vertically.
10	Welding Joints	Welding should be as per IS: 832/64
11	Painting	The channel cross arm shall be properly brushed to make it free from rust and then coated with two coating of red oxide zinc chromate painted as per IS : 5660/70.
12	For galvanization	The cross arm shall be properly brushed to make it free from rust and hot dip galvanized confirming to IS: 2629.
13	Weight	11.25 kg (approx)

TECHNICAL SPECIFICATION FOR CLAMPS & CONNECTORS

CLAMPS & CONNECTORS: Clamps & connectors shall conform to IS: 5561. The clamps and connectors shall be made of materials listed below:

For connecting ACSR conductors	Aluminium alloy casting, conforming to designation A6 of IS: 617 and shall be tested for all tests as per IS: 617
For connecting equipment	Bimetallic connectors made from aluminium alloy casting conforming to

terminals made of copper with ACSR conductor	designation A6 of IS:617 with 2mm thick Bimetallic liner and shall be tested as per IS:617
For connecting GS shield wire	Galvanised mild steel
Bolts, Nuts & plain washers	Hot dip galvanised mild steel for sizes M12 and above, and electro-galvanised for sizes below M12
Spring washers for items 'a' to 'c'	Electro-galvanised mild steel suitable for at least service condition 4 as per IS:1573

All castings shall be free from blow holes, surface blisters, cracks and cavities. All sharp edges and corners shall be blurred and rounded off.

No current carrying part of a clamp or connector shall be less than 10 mm thick. They shall be designed and manufactured to have minimum contact resistance.

For Bimetallic clamps or connectors, copper alloy liner of minimum 2 mm thickness shall be provided.

Flexible connectors, braids or laminated strips made up of copper/ aluminium for the terminal clamps for equipment shall be suitable for both expansion or through (fixed/ sliding) type connection of IPS Aluminium tube as required. In both the cases the clamp height (top of the mounting pad to center line of the tube) should be same.

Size of the terminal/conductor for which the clamp/connector is suitable shall be embossed/punched (i.e. indelibly marked) on each components of the clamp/ connector, except on the hardware.

Clamp shall be designed to carry the same current as the conductor and the temperature rise shall be equal or less than that of the conductor at the specified ambient temperature. The rated current for which the clamp/ connector is designed with respect to the specified reference ambient temperature, shall also be indelibly marked on each component of the clamp/connector, except on the hardware.

Clamps and connector shall be designed corona controlled.

1. GALVANIZED CHANNEL CROSS ARMS

2.0 Scope

This specification covers the design, manufacture, testing at manufacturer's works, transport to site, insurance, storage, erection and commissioning of Galvanized Cross Arm and Channel used for 11 KV line complete with all accessories as specified.

3.0 Standards

The M.S Cross Arm and channel supplied under this specification shall conform to the latest issue of the relevant Indian Standards IS – 226:1975, Regulations etc. except where specified otherwise.

The rolling and cutting tolerance for steel product conforming to IS: 266 shall be those specified in the IS: 1852-1973 with latest revision.

Galvanization conforming to latest version of IS:2629 or equivalent international specifications

In the event of conforming to any standards other than the Indian Standards, the salient features of comparison shall be clearly set out separately.

4.0 General Requirement :

- xix. The cross arm shall be fabricated grade of mild steel of channel section as per requirement.
- xx. All steel members and other parts of fabricated material as delivered shall be free of warps, local deformation, unauthorized splices, or unauthorized bends.
- xxi. Bending of flat strap shall be carried out cold. Straightening shall be carried out by pressure and not by hammering. Straightness is of particular importance if the alignment of bolt holes along a member is referred to its edges.
- xxii. Holes and other provisions for field assembly shall be properly marked and cross referenced. Where required, either by notations on the drawing or by the necessity of proper identification and fittings for field assembly, the connection shall be match marked.
- xxiii. A tolerance of not more than 1mm shall be permitted in the distance between the center lines of bolt holes. The holes may be either drilled or punched and, unless otherwise stated, shall be not more than 2mm greater in diameter than the bolts.
- xxiv. When assembling the components force may be used to bring the bolt holes together (provided neither members nor holes are thereby distorted) but all force must be removed before the bolt is inserted. Otherwise strain shall be deemed to be present and the structure may be rejected even though it may be, in all other respects, in conformity with the specification.
- xxv. The back of the inner angle irons of lap joints shall be chamfered and the ends of the members cut where necessary and such other measures taken as will ensure that all members can be bolted together without strain or distortion. In particular, steps shall be taken to relieve stress in cold worked steel so as to prevent the onset of embitterment during galvanizing.
- xxvi. Similar parts shall be interchangeable.
- xxvii. Shapes and plates shall be fabricated and assembled in the shop to the greatest extent practicable. Shearing flame cutting and chipping shall be done carefully, neatly and accurately. Holes shall be cut, drilled or punched at right angles to the surface and shall not be made or enlarged by burning. Holes shall be clean-cut without torn or ragged edges, and burrs resulting from drilling or reaming operations shall be removed with the proper tool.
- xxviii. Shapes and plates shall be fabricated to the tolerance that will permit field erection within tolerance, except as otherwise specified. All fabrication shall be carried out in a neat and workmanlike manner so as to facilitate cleaning, painting, galvanizing and inspection and to avoid areas in which water and other matter can lodge.
- xxix. Contact surfaces at all connections shall be free of loose scale, dirt, burrs, oil and other foreign materials that might prevent solid seating of the parts.
- xxx. Welded joints not permissible.
- xxxi. The rolling and cutting tolerance for steel product conforming to IS: 266 shall be those specified in the IS: 1852-1973 with latest revision.
all dimensions are subject to the following tolerances:
a) dimensions up to and including 50mm: +1mm: and
b) dimensions greater than 50mm: +2%
- xxxii. The channel cross arm shall be properly brushed to make it free from rust.
- xxxiii. For galvanized channel :
All ferrous parts including all sizes of nuts, bolts, plain and spring washers, support channels, structures, shall; be hot dip galvanized conforming to latest version of IS:2629 or any other equivalent standard. The zinc coating shall be smooth, continuous and uniform. It shall be free from acid spot and shall not scale, blister or be removable by handling or packing. There shall be no impurities in the zinc or additives to the galvanic bath which could have a detrimental effect on the durability of the zinc coating. Before packing, all welding, drilling, cutting, grinding and other finishing operations must be completed and all grease, paints, varnish, oil, welding slag and other foreign matter completely removed. All protuberances, which would affect the life of galvanizing shall also be removed.

The weight of zinc deposited shall be in accordance with that stated in Standard IS 2629 and shall not less than 0.61kg/m² with a minimum thickness of 86 microns for items of thickness more than 5mm, 0.46kg/m² (64 microns) for items of thickness between 2mm and 5mm and 0.33kg/m² (47 microns) for items less than 2mm thick.

- xxxiv. The raw materials and fabrication thereof in respect of cross arm shall be furnished along with dimension.
- xxxv. The hole for fixing of insulator and pole clamp shall be provided as per requirement.

xxxvi. One copy of the drawing of cross arm for each size shall be furnished along with the technical bid.

REQUIRED TECHNICAL SPECIFICATION FOR GI CHANNEL CROSS ARM

(A)

Sl No.	Description	Particular
1	Type of cross arm	GI Channel cross arm
2	Size	100 x 50x 50x6 x 2200 mm
3	Material	Mild Steel channel(galvanized)
4	Length	2200 mm
5	Breath	100 mm
6	Width	50 mm
7	Thickness	6 mm
8	Hole for foxing of insulator	20 mm
9	Center to center distance for hole	1070mm
10	Weight	20.5 kg (approx)
11	Galvanization	The cross arm shall be properly brushed to make it free from rust and hot dip galvanized confirming to IS: 2629 or equivalent international specifications.

(B)

Sl No.	Description	Particular
1	Type of cross arm	GI Angle cross arm
2	Size	50x 50x6 mm
3	Material	Mild Steel channel(galvanized)
4	Length	2200 mm
5	Breath	50 mm
6	Width	50 mm
7	Thickness	6 mm
8	Hole for foxing of insulator	20 mm
9	Center to center distance for hole	1070mm
10	Weight	20.5 kg (approx)
11	Galvanization	The cross arm shall be properly brushed to make it free from rust and hot dip galvanized confirming to IS: 2629 or equivalent international specifications.

2. TECHNICAL PARTICULARS OF COMPOSITE POLYMERIC DISC INSULATOR FOR 11 KV, 90 KN WITH CLAMPS, NUTS AND BOLTS

Sl. No	Description	Unit	11KV , 90 KN , T& C type
1	Type of Insulator		Composite polymeric Insulators
2	Standard according to which the Insulator		IES-61109 with up to date amendments

	manufacture and tested		
3	Name of material used in manufacture Of the insulator with class/grade		Silicon/ Polyolefin material
(a)	Material of core (FRP rod)		ECR glass boron content free
	i) E-glass or ECR-glass		
	ii) Boron content		
(b)	Material of housing & Weather sheds []		36%
(c)	(material of end fitting)		Hot dip galvanized high strength steel
(d)	Sealing compound for end fittings		Silicon based sealants
4	Color		Grey/ Red
5	Electrical characteristics		
(a)	Normal system voltage	KV(rms)	11 KV
(b)	Highest system voltage	KV(rms)	12 KV
(c)	Dry power Frequency withstand voltage	KV(rms)	35 KV
(d)	Wet power frequency withstand voltage	KV (rms)	35 KV
(e)	Dry flashover voltage	KV(rms)	>35KV
(f)	Wet flashover voltage	KV(rms)	>35KV
(g)	Dry lighting impulse withstand voltage		
	a) Positive	KV(peak)	75 KV
	b)Negative	KV(peak)	75KV
(h)	Dry lighting impulse flashover voltage	KV(peak)	
	c) positive		95KV
	d) Negative	KV(peak)	95 KV
(i)	R/V at 1MHz when energized at 10KV/30KV(rms) under dry condition	Microvolt	As per IES specification
(j)	Creepage distance (mm)	mm	320 mm
6	Mechanical characteristics		
(a)	Minimum failing load	KN	90 KN
7	Dimension of insulator		Drawing to be attached

(i)	Weight	Kg	0.90 Kg (Approx)
(ii)	Dia of FRP rod	mm	16 mm
(iii)	Length of FRP rod	mm	drawing to be attached as per type test
(iv)	Die. Of Weather sheds	mm	drawing to be attached as per type test
(v)	Thickness of housing	mm	(3mm-Min)
(vi)	Dry arc distance	mm	drawing to be attached as per type test
	Dimension drawing of insulator including weight with clearances min weight enclosed		Provided
8	Method of fixing of sheds to housing (specify single moulder Modular construction moulding)		Modular Design
9	No. of Weather sheds		drawing to be attached as per type test
10	Types of sheds		drawing to be attached as per type test
(i)	Aerodynamic		Aerodynamic
(ii)	With under ribs		-----
11	Packing details		Each insulator in poly bag then packed in master carton- 7Ply
(a)	Types of packing		Corrugated Bodies
(b)	No. of insulator each pack		One master carton box containing 16Pcs
(c)	Gross weight of package		17 KG (approx.)
12	Any other particulars which the bidder may like to give		-----
13	Performance Guarantee (from date of commissioning)		18 Months

**FORMS
FOR
GUARANTEED TECHNICAL PARTICULARS
(GTP)**

GUARANTEED TECHNICAL AND OTHER PARTICULARS FOR STEEL TUBULAR POLE

(TO BE FILLED IN BY THE BIDDER)

:-SL. NO.	DESCRIPTION	UNIT	SP-76	SP-66
	Name of the bidder			
1	Name of Manufacturer			
2	Place of manufacture			
3	Country in origin			
4	IS Standards Application			
5	Type of Pole			
6	Total length	M		
7	Out side diameter and thickness of section			
A	Bottom	Mm		
B	Middle	Mm		
C	Top	Mm		
8	Minimum Guaranteed weight of pole (without base plate)			
9	Effective length of Section			
A	Bottom			
B	Middle			
C	Top			
9	Minimum Guaranteed weight of Base plate			
10	Breaking load			
11	Crippling load			
12	Galvanization—gm/sqm			
	PERFORMANCE GAURANTEE			

GUARANTEED TECHNICAL AND OTHER PARTICULARS FOR ACSR RACCOON CONDUCTOR

CONDUCTOR		
1. Conductor:		
2. IS applicable:		
3. Wire Diameter		
Aluminum (mm)		
Steel(mm)		
4. Number of strands:		
Steel centre		
1st steel layer		
1st Aluminium layer		
2nd Aluminium layer		
5. Sectional Area of Aluminium (sq. mm.)		
6. Total Sectional Area(sq.mm.)		
7. Overall diameter(mm)		
8. Approximate weight(Kg./Km.)		
9. Calculated D.C rersistance at 20 degrees C., maximum. (Ohms/Km)		
10. Ultimate tensile strength (KN)		
11. Final modulus of elasticity (GN/sq.m)		
12. Coefficient of linear expansion x 10 ⁻⁶ per°C		
13. Lay ratio		
Steel core 6 wire layer		
Aluminium1st layer		
2 nd layer		
14. Technical Particulars		
a. Diameter-mm		
Standard(mm)		
Maximum (mm)		
Minimum (mm)		
b. Cross-sectional area of nominal diameter wire (mm ²)		
c. Weight (Kg./Km)		
d. Min. breaking load (KN)		
Before stranding		
After Stranding		
e. D.C resistance at 20°C min. (Ohm/Km)		

GUARANTEED TECHNICAL PARTICULARS OF 33 KV COMPOSITE POLYMER PIN INSULATORS

S.N	Description	33 KV
1	Name of Manufacturer	
2	Address:	
(a)	Registered Office	
(b)	Factory	
3	Type of Insulators	
4	Standard specification to which the insulators manufactured and tested	
5	Name of Material used in manufacture of the Insulator (With class/ Grade)	
(a)	Material of core rod	
(b)	Material of Housing & Weather sheds (silicon content by weight)	
(c)	Material of end fittings : tongue/ clevis	
(d)	Sealing compound for end fitting	
6	Colour Glaze of Insulator	
7	Electrical Characteristics:	
(a)	Nominal System Voltage (kV RMS)	
(b)	Highest System voltage (kV RMS)	
(c)	Dry power frequency withstand (kV RMS)	
(d)	Wet power frequency withstand (kV RMS)	
(e)	Dry flash over voltage (kV RMS)	
(f)	Wet flash over voltage (kV RMS)	
(g)	Dry lightning impulse withstand voltage	
	(a) Positive (kV Peak)	
	(b) Negative (kV Peak)	
(h)	Dry lightning impulse flashover voltage	
	(a) Positive (kV Peak)	
	(b) Negative (kV Peak)	
(i)	RIV at 1MHz when energized at 10kV/30kV(rms) under dry condition(microvolt)	
(j)	Creepage distance (min) mm	
8	Mechanical Characteristics:	
	Minimum failing load(KN)	
9	dimensions of insulator:	
(i)	Weight(kg)	
(ii)	dia of FRP rod(mm)	
(iii)	Length of ERP rod(MM)	
(iv)	dia of weather sheds (mm)	
(v)	Thickness of housing (mm)	
(vi)	Dry arc distance(mm)	
10	Dimensioned drawings of Insulator(including weight with tolerances in weight) enclosed	
11	Method of fixing of sheds to housing specify):- Single mould or modular construction(injection moulding/ compression moulding)	
12	No. of weather sheds	
13	Type of sheds	
(i)	Aerodynamic	
(ii)	With under ribs	
14	Packing details	
(a)	Type of packing	
(b)	No. of Insulators in each pack	
(c)	Gross weight of package	

**GUARANTEED TECHNICAL PARTICULARS OF COMPOSITE POLYMERIC INSULATOR (STRING/ DISC) FOR 33 KV ,
90 KN (T & C) TYPE**
(To be filled in by the bidder)

Sl. No	Description	Unit	33 KV , 90 KN , T& C type
1.	Type of Insulator		
2.	Standard according to which the Insulator manufacture and tested		
3.	Name of material used in manufacture Of the insulator with class/grade		
(a)	Material of core (FRP rod) i) E-glass or ECR- glass ii) Boron content		
(b)	Material of housing & Weather sheds Silicon content by weight		
(c)	(material of end fitting)		
(d)	Sealing compound for end fittings		
4.	Color		
5.	Electrical characteristics		
(a)	Normal system voltage	KV(rms)	
(b)	Highest system voltage	KV(rms)	
(c)	Dry power Frequency withstand voltage	KV(rms)	
(d)	Wet power frequency withstand voltage	KV (rms)	
(e)	Dry flashover voltage	KV(rms)	
(f)	Wet flashover voltage	KV(rms)	
(g)	Dry lighting impulse withstand voltage a) Positive b) Negative	KV(peak) KV(peak)	
(h)	Dry lighting impulse flashover voltage c) positive d) Negative	KV(peak) KV(peak)	
(i)	R/V at 1MHz when energized at 10KV/30KV(rms) under dry condition	Microvolt	
(j)	Creepage distance (mm)	Mm	
6.	Mechanical characteristics		
(a)	Minimum failing load	KN	
7.	Dimension of insulator		
(i)	Weight	Kg	
(ii)	Dia of FRP rod	Mm	
(iii)	Length of FRP rod	Mm	
(iv)	Die. Of Weather sheds	Mm	
(v)	Thickness of housing	Mm	
(vi)	Dry arc distance	Mm	
	Dimension drawing of insulator including weight with clearances min weight enclosed		
8.	Method of fixing of sheds to housing (specify single moulder Modular construction moulding)		

9.	No. of Weather sheds		
10.	Types of sheds		
(i)	Aerodynamic		
(ii)	With under ribs		
11.	Packing details		
(a)	Types of packing		
(b)	No. of insulator each pack		
(c)	Gross weight of package		
12.	Any other particulars which the bidder may like to give		

**GUARANTEED TECHNICAL PARTICULARS OF H.T. GUY INSULATOR
(To be filled in by the bidder)**

Sl.NO.	PARAMETER	GUARANTEED VALUE
1	Manufacturer's Name & Address	
2	Type of insulator	
3	Standards to which insulator will conform	
4	Dimensions	
5	Hole diameter (mm)	
6	Color of glaze	
7	Dry Power Frequency withstand Voltage (kV)	
8	Wet Power Frequency withstand Voltage (kV)	
9	Minimum failing load (Newton)	
10	Minimum Creepage distance (mm)	
11	Weight per piece (Kg)	
12	Temperature cycle test (as per ISS)	
13	Porosity test (as per ISS)	
14	Tolerance, if any (as per ISS)	
15	Performance guarantee	

GUARANTEED TECHNICAL PARTICULARS FOR G.I. WIRE

(To be filled in by the bidder)

A.	G.I. Wire (4 mm dia)	:	
1.	Size of Wire	:	
2.	Tolerance in size of wire	:	
3.	Tensile strength	:	
4.	Wrapping list	:	
5.	Galvanising conforming to IS : 4826 – 1968	:	
6.	Guarantee	:	
B.	G.I. Wire (5 mm dia)	:	
1.	Size of Wire	:	
2.	Tolerance in size of wire	:	
3.	Tensile strength	:	
4.	Wrapping list	:	
5.	Galvanising conforming to IS : 4826 – 1968	:	
6.	Performance guarantee	:	

GUARANTEED TECHNICAL PARTICULARS FOR C.I. PIPE (EARTH)

(To be filled in by the bidder)

Sl.No.	G.I.Wire (4 mm dia)	:	
1.	Length of Pipe	:	
2.	Diameter of Pipe	:	
3.	External Dia of Pipe	:	
4.	Thickness of Pipe	:	
5.	Internal Dia of Socket	:	
6.	Thickness of Socket	:	
7.	Internal Depth of Socket	:	
8.	Internal Radius of Socket	:	
9.	Width of Grooves of Socket	:	
10.	External Dia of Grooves Socket	:	
11.	Weight of Pipe	:	
12.	Hydraulic Test	:	
13.	Guarantee	:	

GUARANTEED TECHNICAL PARTICULARS FOR TENSION HARDWARE FITTINGS
(To be filled in by the bidder)

A.	TENSION HARDWARE FITTINGS		
	Size of conductor for which the fitting is designed		
1.	Electrical resistance of dead end assembly	Ohms	
2.	Slip strength of dead end assembly	kN	
3.	Total weight of assembly		
a)	Single Tension	Kg	
b)	Double Tension	Kg	
4.	UTS of Tension string hardware		
a)	Single Tension	kN	
b)	Double Tension	kN	
5.	Purity of zinc used for galvanizing	%	
6.	Min. No. of dips in standard Preece test the ferrous parts can withstand	No.	
B.	MID SPAN COMPRESSION JOINT FOR CONDUCTOR		
	Size of conductor for which the fitting is designed		
1.	Suitable for conductor size	Mm	
2.	Material of Aluminum sleeve		
a)	Aluminum		
b)	Purity of Aluminum sleeve		
3.	Outside diameter of sleeve before compression		
a)	Aluminum	Mm	
b)	Steel	Mm	
4.	Inside diameter of sleeve before compression		
a)	Aluminum	Mm	
b)	Steel	Mm	
5.	Length of sleeve before compression		
a)	Aluminum	Mm	
b)	Steel	Mm	
6.	Dimensions of sleeve after compression		
a)	Aluminum		
i)	Corner to Corner	Mm	
ii)	Face to Face	Mm	
b)	Steel		
7.	Length of sleeve after compression		

a)	Aluminum	Mm		
b)	Steel	Mm		
8.	Weight of sleeve			
a)	Aluminum	Kg		
b)	Steel	Kg		
c)	Total	Kg		
9.	Slipping strength	kN		
10.	Conductivity of the compressed unit expressed, as percentage of the conductivity of equivalent length of bare conductor	%		
C.	REPAIR SLEEVE FOR CONDUCTOR			
	Size of conductor for which the fitting is designed			
1.	Suitable for conductor size	Mm		
2.	Material of Sleeve			
a)	Aluminum/Aluminum Alloy			
b)	Purity of Aluminum	%		
3.	Inside diameter of sleeve before compression	Mm		
4.	Outside dimensions of sleeve			
a)	Dia before compression	Mm		
b)	After compression	Mm		
i)	Corner to Corner			
ii)	Face to Face			
5.	Length of sleeve			
a)	Before compression	Mm		
b)	After compression	Mm		
6.	Weight of sleeve	Kg		
D.	PARTICULARS OF VIBRATION DAMPER FOR CONDUCTOR			
	Size of conductor for which the fitting is designed			
1.	Suitable for conductor size	Mm		
2.	Total weight of one damper	Kg		
3.	Diameter of each damper mass	Mm	Right	Left
4.	Length of each damper mass	Mm		
5.	Weight of each damper masses	Kg		
6.	Material of damper masses			
7.	Material of the stranded messenger cable			
8.	Material for clamp			
9.	Number of strands in stranded messenger cable			

10.	Lay ratio of stranded messenger cable		
11.	Minimum ultimate tensile strength of stranded messenger cable	Kg/mm	
12.	Slipping strength of stranded messenger cable (mass pull off)	kN	
a)	First frequency	Hz	
b)	Second frequency	Hz	
14.	Designed clamping torque	Kg-m	
15.	Slipping strength of damper clamp		
a)	Before fatigue test	kN	
b)	After fatigue test	kN	
16.	Magnetic power loss per vibration damper at a conductor Current of 350 Ampere, 50 hz AC-	Watts	
17.	Percentage Variation in reactance after fatigue test in comparison with that before fatigue	%	
18.	Percentage Variation in power dissipation after fatigue test in comparison with that before fatigue	%	
E.	SPAN OF COMPRESSION JOINT FOR GALVANISED STEEL EARTHWIRE		
	Size of Earthwire for which the fitting is designed		
1.	Material of joint		
a)	Type of Material with Chemical composition		
b)	Hardnes of steel sleeve (Brinell Hardness)		
2.	Inside diameter of sleeve before compression		
a)	Steel Sleeve	Mm	
b)	Aluminum Sleeve	Mm	
c)	Aluminum Filter Sleeve	Mm	
3.	Outside diameter of sleeve		
a)	Steel Sleeve	Mm	
b)	Aluminum Sleeve	Mm	
c)	Aluminum Filter Sleeve	Mm	
4.	Outside dimensions of sleeve after compression		
a)	Steel Sleeve	Mm	
b)	Corner to Corner	Mm	
c)	Surface to Surface	Mm	
5.	Length of Steel Sleeve		
a)	Before compression	Mm	
b)	After compression	Mm	

6.	Length of Aluminum Sleeve		
a)	Before compression	Mm	
b)	After compression	Mm	
7.	Weight of Sleeve		
a)	Steel	Mm	
b)	Aluminum	Mm	
c)	Filler Aluminum Sleeve	Mm	
8.	Slipping Strength		
9.	Conductivity of the compressed unit expressed as a percentage of the conductivity of equivalent length of bare earthwire	%	
F.	VIBRATION DAMPER FOR GALVANISED STEEL EARTHWIRE (7/3.15mm)		
	Size of Earthwire for which the fitting is designed		
1.	Suitable for earthwire size	Mm	
2.	Total weight of one damper	Kh	
3.	Diameter of each damper mass	Mm	
4.	Length of each damper mass	Mm	
5.	Weight of each damper mass	Kg	
6.	Material of damper mass	Kg	
7.	Material of Clamp		
8.	Material of Stranded messenger cable		
9.	Number of Strands in stranded messenger cable		
10.	Lay ratio stranded messenger cable		
11.	Minimum ultimate tensile strength of stranded messenger cable	Kg/Sq.mm	
12.	Slipping strength of stranded messenger cable (mass pull off)	kN	
13.	Resonance frequencies		
a)	First frequency	Hz	
b)	Second frequency	Hz	
G.	FLEXIBLE COPPER BOND		
1.	Stranding		
2.	Cross Sectional Area	Sq.mm	
3.	Minimum Copper equivalent area	Sq.mm	
4.	Length of Copper Cable	Mm	
5.	Material of lugs		
6.	Bolt Size		
a)	Diameter	Mm	
b)	Length	Mm	
7.	Resistance	Ohm	

8.	Total Weight of Flexible Cu bond	Kg	
H.	TENSION CLAMP FOR GALVANIZED STEEL EARTHWIRE		
	Size of earthwire for which the fitting is designed		
1.	Material		
i)	Shackle		
ii)	a) Compression clamp		
	b) Hardness of the material (BHN)	BHN	
2.	Inside diameter of the clamp before compression	Mm	
3.	Outside dimensions of sleeve before compression		
4.	Outside dimensions of sleeve		
a)	Corner to Corner	Mm	
b)	Surface to Surface	Mm	
5.	Length of Clamp		
a)	Before Compression	Mm	
b)	After Compression	Mm	
6.	Weight	Kg	
7.	Slip strength (minimum)	kN	
8.	Compression Pressure	T	
9.	Minimum Breaking Strength of assembly (excluding clamp)	kN	
10.	Performance guarantee		

GUARANTEED TECHNICAL PARTICULARS FOR GI CHANNEL CROSS ARM

[100 x 50x 50x6 x 2200]

(To be filled in by the bidder)

SI No.	Description	Particular
1	Type of cross arm	
2	Size	
3	Material	
4	Length	
5	Breath	
6	Width	
7	Thickness	
8	Hole for foxing of insulator	
9	Center to center distance for hole	
10	Weight	
11	Galvanization	

SECTION -VII FORMS OF BID

Annexure 1. Format for sending query to APDCL

[Query may be sent via email to cgm.ppd@apdcl.org]

From:[Reference No.] [Address of the Bidder]
[Telephone No., Fax No., Email] [Date]

To:

The Chief General Manager (PP&D)
Assam Power Distribution Company Limited 6th Floor,
Bijulee Bhawan, Paltanbazar Guwahati, Assam

Sub: Query.

Ref: Your NIT No. CGM (PP&D)/APDCL/SOPD 2022-23 (SDN)/Domoni (Matia) - Damra 33KV Line/08
Dtd: 26-08-2022

Dear Sir,

Please find below our query with respect to the BID DOCUMENT subject to the terms and conditions therein:

	Reference Clause No.	Page No.	Concise Query

Thanking you,

Sincerely yours,

[Insert Signature here] [Insert Name here] [Insert Designation here]

**Annexure 2: Format of Covering Letter by single Bidder/Lead Joint
Venturepartner for submission of Bid**

[Covering Letter shall be on the official letterhead of the Single Bidder/Lead partner of the Joint Venture]

Reference No.]

[From:

[Address of the Lead Partner Member]

[Telephone No., Fax No., Email] [Date]

To:

The Chief General Manager (PP&D)
Assam Power Distribution Company Limited
6thFloor, Bijulee Bhawan, Paltanbazar
Guwahati, Assam

Sub: Submission of Bid against Your NIT No. CGM (PP&D)/APDCL/SOPD 2022-23 (SDN)/
Domoni (Matia) - Damra 33KV Line/08 Dtd: 26-08-2022

Dear Sir,

We, the undersigned [Insert name of the Lead Partner of the Joint Venture] having read, examined and understood in detail the BID DOCUMENT for the work mentioned in the Bid Document and hereby submit our Bid comprising of Technical and Financial Bids.

1. We give our unconditional acceptance to the BID DOCUMENT including but not limited to all its instructions, terms and conditions, and formats attached thereto, issued by APDCL, as amended. In token of our acceptance to the BID DOCUMENT, the same have been initialed by us and enclosed to the Bid. We shall ensure that our Consortium shall execute such requirements as per the provisions of the BID DOCUMENT and provisions of such BID DOCUMENT shall be binding on us.

2. Fulfillment of BID DOCUMENT Eligibility

We undertake that we fulfill the Eligibility Criteria stipulated in the BID DOCUMENT and have been in operation for at least 3 (three) years and must have 3 (three) years of experience as Turnkey Contractor for Electrical Installations, and fulfill all the eligibility requirements as the Lead Partner as outlined in the BID DOCUMENT.

3. No Deviation

We have submitted our Financial Bid strictly as per terms and formats of the BID DOCUMENT, without any deviations, conditions and without mentioning any assumptions or notes for the Financial Bid in the said format.

4. Acceptance

We hereby unconditionally and irrevocably agree and accept that the decision made by APDCL in respect of any matter regarding or arising out of the BID DOCUMENT shall be binding on us. We hereby expressly waive any and all claims in respect of Bid process.

We confirm that there are no litigations or disputes against us, which materially affect our ability to fulfill our obligations with regard to fulfilling our obligations as per the BIDDOCUMENT.

5. Familiarity with Relevant Indian Laws and Regulations

We confirm that we have studied the provisions of the relevant Indian laws and regulations as required to enable us to submit this Bid and execute the BID DOCUMENT Documents, in the event of our selection as Selected Bidder. We further undertake and agree that all such factors as mentioned in the BID DOCUMENT have been fully examined and considered while submitting the Bid.

6. Contact Person

Details of the contact person representing our Bidding Consortium supported by the Power of Attorney prescribed in the BID DOCUMENT are furnished as under:

Name :.....
Designation :.....
Company:.....
Address:
Mobile:
Phone:
Fax:
Email:

- 7. We are submitting herewith the Technical Bid containing duly signed formats (duly attested) as desired by you in the BID DOCUMENT for your consideration.
- 8. We are also submitting herewith the Financial Bid in electronic form, as per the terms and conditions in the BIDDOCUMENT.
- 9. It is confirmed that our Bid is consistent with all the requirements of submission as stated in the BID DOCUMENT and subsequent communications from APDCL.
- 10. The information submitted in our Bid is complete, strictly as per the requirements stipulated in the BID DOCUMENT and is correct to the best of our knowledge and understanding. We would be solely responsible for any errors or omissions in our Bid.
- 11. We confirm that all the terms and conditions of our Bid are valid for acceptance for a period of 6 (six) months from the Bid Submission Deadline.
- 12. We confirm that we have not taken any deviation so as to be deemed non-responsive with respect to the provisions stipulated in the BIDDOCUMENT.
- 13. We confirm that no order/ ruling has been passed by any Competent Court or Appropriate Commission against us or any of the partners of our Joint Venture in the preceding one (1) year from the Bid Submission Deadline for breach of any contract

Section VII: Forms of Bid

and that the Bid Security submitted by the us or any of our Joint Venture Partners has not been forfeited, either partly or wholly, in any bid process in the preceding one(1) year from the Bid Submission Deadline.

Dated the [Insert date of the month] day of [Insert month, year] at
[Insert place].
Thanking you,

Sincerelyyours,

[InsertSignaturehere]
[InsertNamehere] [Insert
Designationhere]

Annexure 3:

**Format for Joint Venture Agreement to be entered amongst all partners of the
Joint Venture**

FORM OF JOINT VENTURE AGREEMENT

(ON NON-JUDICIAL STAMP PAPER OF APPROPRIATE VALUE TO BE PURCHASED
IN THE NAME OF JOINT VENTURE)

PROFORMA OF JOINT VENTURE AGREEMENT BETWEEN _____
_____ AND _____ FOR BID SPECIFICATION No. ____ OF
ASSAM POWER DISTRIBUTION COMPANY LTD.

THIS Joint Venture agreement executed on this ___ day of ___ Two thousand eight
and between M/S _____ a Company
incorporated under the law of _____ and having its registered office at _____
_____ (herein after called the "Lead Partner" which expression shall include its successors,
executors and permitted assigns) and M/S _____ a Company incorporated under the laws of
_____ and having its registered office at _____
(herein after called the "Partner" which expression shall include its successors, executors and
permitted assigns) for purpose of making a bid and entering into a contract* (in case of
award) for Construction of _____ (name of the package) against the specifications
No. ____ of **APDCL BIJULEE BHAWAN, PALTAN BAZAR, GUWAHATI- 781001**, an Electricity
Distribution Company registered under Indian Electricity Act, 2003 having its registered office
at Bijulee Bhawan, Paltan Bazar, Guwahati – 781001 (herein after called the "Owner")

WHEREAS the Owner invited bids as per the above-mentioned Specification for the design
manufacture, supply and erection, testing and commissioning of Equipment/Materials
stipulated in the bidding documents under subject Package*
For ____ (Package Name) (Specification No.: ____)

AND WHEREAS Annexure – A (Qualification Requirement of the Bidder). Section-4, forming part
of the bidding documents, stipulates that a Joint Venture of two or more qualified firms as
partners, meeting the requirement of Annexure-A, Section 4 as applicable may bid, provided the
Joint Venture fulfills all other requirements of Annexure-A, Section 4 and in such a case, the BID
shall be signed by all the partners so as to legally bind all the Partners of the Joint Venture, who
will be jointly and severally liable to perform the Contract and all obligations hereunder.

* Strike which is not applicable.

The above clause further states that the Joint Venture agreement shall be attached to the bid
and the contract performance guarantee will be as per the format enclosed with the bidding
document without any restriction or liability for either party.

AND 'WHEREAS the bid has been submitted to the Owner vide proposal No dated
..... by Lead Partner based on the Joint Venture agreement between all
the Partners under these presents and the bid in accordance with the requirements of
Annexure-A (Qualification Requirements of the Bidders), Section -4 has been signed by all the
partners.

NOW THIS INDENTURE WITNESSETH AS UNDER:

In consideration of the above premises and agreements all the Partners to this, Joint Venture do hereby now agree as follows:

1. In consideration of the award of the Contract by the Owner to the Joint Venture partners, we, the Partners to the Joint Venture agreement do hereby agree that M/S__shall act as Lead Partner and further declare and confirm that we shall jointly and severally be bound unto the Owner for the successful performance of the Contract and shall be fully responsible for the design, manufacture, supply, and successful performance of the equipment in accordance with the Contract.
2. In case of any breach of the said Contract by the Lead Partner or other Partner(s) of the Joint Venture agreement, the Partner(s) do hereby agree to be fully responsible for the successful performance of the Contract and to carry out all the obligations and responsibilities under the Contract in accordance with the requirements of the Contract.
3. Further, if the Owner suffers any loss or damage on account of any breach in the Contract or any shortfall in the performance of the equipment in meeting the performance guaranteed as per the specification in terms of the Contract, the Partner(s) of these presents undertake to promptly make good such loss or damages caused to the Owner, on its demand without any demur. It shall not be necessary or obligatory for the Owner to proceed against Lead Partner to these presents before proceeding against or dealing with the other Partner(s)
4. The financial liability of the Partners of this Joint Venture agreement to the Owner, with respect to any of the claims arising out of the performance or non-performance of the obligations set forth in the said Joint Venture agreement, read in conjunction with the relevant conditions of the Contract shall, however, not be limited in any way so as to restrict or limit the liabilities of any of the Partners of the Joint Venture agreement.
5. It is expressly understood and agreed between the Partners to this Joint Venture agreement that the responsibilities and obligations of each of the Partners shall be as delineated in Appendix-I (*To be incorporated suitably by the Partners) to this agreement. It is further agreed by the Partners that the above sharing of responsibilities and obligations shall not in any way be a limitation of joint and several responsibilities of the Partners under this Contract.
6. This Joint Venture agreement shall be construed and interpreted in accordance with the laws of India and the courts of Assam shall have the exclusive jurisdiction in all matters arising there under.
7. In case of an award of a Contract, We the Partners to the Joint Venture agreement do hereby agree that we shall be jointly and severally responsible for furnishing a contract performance security from a bank in favour of the Owner in the forms acceptable to purchaser for value of 10% of the Contract Price in the currency/currencies of the Contract.
8. It is further agreed that the Joint Venture agreement shall be irrevocable and shall form an integral part of the Contract, and shall continue to be enforceable till the Owner discharges the same. It shall be effective from the date first mentioned above for all purposes and intents.

IN WITNESS WHEREOF, the Partners to the Joint Venture agreement have through their authorized representatives executed these presents and affixed Common Seals of their companies, on the day, month and year first mentioned above.

IN WITNESS WHEREOF, the Partners to the Joint Venture agreement have through their authorized representatives executed these presents and affixed Common Seals of their companies, on the day, month and year first mentioned above.

Common Seal of ____
has been affixed in my/our presence
pursuant to the Board of Director's
resolution dated ____ Name
Signature
Designation

For Lead Partner

(Signature of authorized representative)

Name
Designation

Common Seal of the Company

Common Seal of ____
has been affixed in my/our presence
pursuant to the Board of Director's
resolution dated ____

For Other Partner

(Signature of authorized representative)

Name
Signature
Designation
Name
Designation

Common Seal of the Company

WITNESSES

1. Name . (Signature)
(Official address)

2. Name . (Signature)
(Official address)

Annexure 4: Format for Power of Attorney for Joint Venture**FORM OF POWER OF ATTORNEY FOR JOINT VENTURE**

(On Non-judicial Stamp Paper of Appropriate value to be purchased in the Name of Joint Venture)

KNOW ALL MEN BY THESE PRESENTS THAT WE, the Partners whose details are given hereunder..... have formed a Joint Venture under the lawsof and having our Registered Office(s)/Head Office(s)at

.....(herein after called the 'Joint Venture' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) acting thorough M/S.....

..... being the Partner in- charge do hereby' constitute, nominateand appoint M/S.....

.....a Company incorporated under the laws of arid having its Registered/Head Office at as our duly 'constituted lawful Attorney (hereinafter called "Attorney" or" Authorized Representative" or "Partner In-charge") to exercise all or any of the powersforandonbehalfof,theJointVentureinregardto (Nameofthe Package)(SpecificationNo)of Assam Power DistributionCompany

Ltd. Bijulee Bhawan, Paltan Bazar, GUWAHATI (hereinafter called the "Owner"). and the bids for which' have been invited by the Owner, to undertake the following acts:

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

It is clearly understood that the Partner In-charge (Lead Partner) shall ensure performance of the Contract(s) and if one or more Partner fail to perform their respective portion of the Contract(s), the same shall be deemed to be a default by all the Partners.

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

The Joint Venture hereby agrees and undertakes to ratify and confirm all the above whatsoever the said Attorney/ Authorized Representative/Partner In-charge quotes in

Section VII: Forms of Bid

the bid, negotiates and signs the Contract with the Owner and/or proposes to act on behalf of the joint Venture by virtue of this Power of Attorney and the same shall bind the Joint Venture as if done by itself.

* Strike which is not applicable.

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

for and on behalf
of the Partners of
Joint Ventures

The Common Seal of the above Partners of the Joint Venture:
The Common Seal has been affixed there unto in the presence
of:

WITNESS

1. Signature ____

Name_

Designation__

Occupation__

2. Signature ____

Name_

Designation__

Occupation__

Annexure 5: Proforma of Bank Guarantee for Contract Performance

(To be stamped in accordance with Stamp Act)

Ref..... Bank Guarantee No.....

Date.....

To

The Chief General Manager (PP&D)
 Assam Power Distribution Company
 Ltd. Bijulee Bhawan, Paltanbazar
 Guwahati-1

Dear Sirs/ Madam,

In consideration of Assam Power Distribution Company Ltd., (herein after referred to as the 'Owner' which expression shall unless repugnant to the context or meaning thereof include its successors, administrators and assigns) having awarded to M/s.....

.....with registered/ Headofficeat (hereinafter referred to as " Contractor" which expression shall unless repugnant to the context or meaning thereof include its successors, administrators, executors and assigns), a Contract by issue of Owner's Letter of Intent No.....dated... andthesamehavingbeenacknowledgedbythecontractor, resulting in a contract and contractor having agreed to provide a Contract Performance Guarantee for the faithful performance of the entire Contract equivalent to 10(%) of the said value Contract to the Owner.

We (Name& Address) having its HeadOfficeat(hereinafter referred to as the "Bank", which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the owner, on demand any or all monies payable by the contractor to be exten to ₹ at anytime up to*(day/month/year) without any demur, reservation , contest , recourse or protest and / or without any reference to this contractor. Any such demand made by the owner on the bank shall be conclusive and binding notwithstanding any difference between the Owner the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. The bank undertakes not to revoke this guarantee during its currency without previous consent of the owner and further agrees that the guarantee herein contained shall continue to be enforceable till the owner discharges this guarantee.

The Owner shall have the fullest liberty without affecting in any way the liability of the Bank under the guarantee, from time to time to extend the time for performance or the contract by the contractor. The owner shall have the fullest liberty, without affecting this guarantee, to postpone from time to time the exercise of any power vested in them or of any right which they might have against the contractor, and to exercise the same at any time in any matter, and either to enforce or to for bear to enforce any covenants, contained or implied, in the contract between the owner and the contractor or any other course or remedy or security available to the owner. The Bank shall not be released to its obligations under these presents by any exercise by the owner of its liberty with reference to the matters aforesaid or any of them or by reason of any other act of omission or commission on the part of the owner or any other indulgences shown by the owner or by any other

matter or thing whatsoever which under law would, but for this provision have the effect of relieving the Bank.

The bank also agrees that the owner at its option shall be entitled to enforce this guarantee against the Bank as a principal debtor, in the first instance without proceeding against the contractor and not withstanding any security or other guarantee the owner may have in relation to the Contractor's liabilities.

Notwithstanding anything contained herein above our liability under this guarantee is restricted to And it shall remain in force up to and including and shall be extended from time to time for such period (not exceeding 1 year) as may be desired by M/s on whose behalf this guarantee has been given.

Dated this Day of 20 at

WITNESS

.....(Signature) (Signature)

.....(Name) (Name)

.....(Official address). (Official address)

Attorney as per power
Of Attorney No.....
Date.....

NB: The stamp paper of appropriate value shall be purchased in the name of issuing bank.

Annexure 6: Proforma of Extension of Bank Guarantee

Ref..... Date.....

To

The Chief General Manager (PP&D)
Assam Power Distribution Company
Ltd. Bijulee Bhawan, Paltanbazar
Guwahati-1

Dear Sirs/ Madam,

Sub: Extension of Bank Guarantee No.....for Rs... Favouing
yourselves, expiring on On account tofM/S... in
respect of contract no..... dated (hereinafter called original Bank
Guarantee).

At therequest of M/s we bank, branchoffice at
..... and having its Head Office at Do hereby extend our liability
under the above mentioned Bank Guarantee No.....
dated.....for a further period of (Years / Months) from.....
toexpireon... expectasprovidedabove,allothertermsand
conditions of the original Bank GuaranteeNo.....dated Shall
remain unaltered and binding.

Please treat this as an integral part of the original Bank Guarantee to which it would be attached.

Yours faithfully

For.....
Manager/ Agent/Accountant
Power of attorney No.....
Dated.....
SEAL OF BANK

Note: The non-judicial stamp paper of appropriate value shall be purchased in the name of the Bank who has issued the Bank Guarantee.

Annexure 7: Proforma of Contract Agreement**(To be executed on non-Judicial stamp paper)**

This Agreement made this day oftwo thousand... Between Assam Power Distribution Company Ltd. having its head office at Bijulee Bhawan, Paltanbazar, Guwahati-1 (hereinafter referred to as 'Owner' or 'APDCL', which expression shall include its administrators, successors and assign on one part and (hereinafter referred to as the 'Contractors 'X' (Name of the contracting Co.) which expression shall include its administrators, successors, executors and permitted assigns) on the other part.

WHEREAS APDCL desirous of..... in Circle associated with APDCL at(District) invited Bids for..... (Briefly describe scope of works) for the first state of the project as per its Bid Specification No.....

AND WHEREAS....."X" Had participated in the above referred Bidding vide their proposal No..... dated..... And awarded the Contract to....." X" on terms and conditions documents referred to therein which have been acknowledged by....."X" resulting into a "Contract"

NOW THEREFORE THIS DEED WITNESS AS UNDER:-**Article****Award**

of Contract APDCL awarded the contract to....."X"for the work of on the terms and conditions contained in its letter of Award No..... Dated..... and the documents referred to therein. The award has taken effect from aforesaid letter of award. The terms and expression used in this agreement shall have the same meaning as are assigned to them in the 'Contract Documents' referred to in this succeeding Article.

Documentation

The contract shall be performed strictly as per the terms and condition stipulated herein and in the following documents attached herewith (hereinafter referred to as "Contract Documents".)

- i) Section 1-11 of the Bidding Document.
- ii) Proposal Sheets, Data Sheets, Drawing work schedule submitted by "X".
APDCL's Letter of Award No.....dated... duly acknowledged by "X".
Quality Plans for manufacturing and field activities entitled as Quality Plan.

All the aforesaid Contract Documents shall form an integral part of this agreement, in so far as the same or any part conform to the bidding documents and what has been specifically agreed to by the Owner in its letter of Award. Any matter inconsistent therewith, contrary or repugnant thereto or any deviations taken by the Contractor in its 'Proposal' but not agreed to specially by the Owner in its Letter of Award shall be deemed to have been withdrawn by the Contractor. For the sake of brevity, this agreement along with its aforesaid Contract Documents shall be referred to as the 'Agreement'.

Conditions & Covenants

The scope of Contract, Consideration, Terms of Payment, Price Adjustments, Taxes wherever applicable, Insurance, Liquidated Damage, Performance Guarantees and all other terms and conditions are contained in APDCL's Letter of Award No.....dated reading conjunction with other aforesaid contract documents. The contract shall be duly performed by the Contractor, but which are needed for successful, efficient, safe and reliable operation of the equipment unless otherwise specifically excluded in the specification under 'exclusion' or

Letter of Award.

The scope of work shall also include supply and installation of all such items which are not specifically mentioned in the contract Documents, but which are needed for successful, efficient, safe and reliable operation of the equipment unless otherwise specifically excluded in the specifications under 'exclusions' or 'Letter of Award'.

Time Schedule

Time is the essence of the Contract and schedules shall be strictly adhered to "X" shall perform the work in accordance with the agreed schedules.

Quality Plans

The Contractor is responsible for the proper execution of the Quality Plans mentioned in Section 4.8 of GTC. The work beyond the customer's hold points will progress only with the owners consent. The Owner will also undertake quality surveillance and quality audit of the Contractor's /Sub- contractor's works, systems and procedures and quality control activities. The Contractor further agrees that any change in the Quality Plan will be made only with the Owner's approval. The contractor shall also perform all quality control activities, inspection and tests agreed with the Owner to demonstrate full compliance with the contract requirements.

The contractor also agrees to provide the Owner with the necessary facilities for carrying out inspection, quality audit and quality surveillance of contractors and its Subcontractor's Quality Assurance Systems and Manufacturing Activities.

These shall include but not limited to the following:

- Relevant plant standards, drawing and procedures;
- Detailed Quality Assurance System manuals for manufacturing activities.
- Storage procedures and instructions weld, NDT, heat treatment prior to commencement of manufacture;
- Complete set of log sheets (blank) mentioned in the Quality Plans.

It is expressly agreed to by the contractor that the quality test and inspection by the owner shall not in any way relieve the contractor of its responsibilities for quality standards and performance guarantee and their other obligations under the Agreement. 3.4.4 "X" agrees to submit quality Assurance Documents to APDCL for review and record after completion and within 3 weeks of dispatch of material.

The package will include the following:

- Factory test result, inspection report for testing required by this contract or applicable codes and standards.
- Two copies of inspection reports duly signed by Quality Assurance personnel of both APDCL and "X" for the agreed customer holdpoints.
- Report of the rectification works where and if applicable.

It is expressly agreed to by the Contractor that notwithstanding the fact that the Contract is termed as Supply-cum-Erection Contract or indicates the break-up of the Contract consideration, for convenience of operation and for payment of tax on supply portion, it is in fact one composite Contract on single source responsibility basis and the Contractor is bound to perform the total Contract in its entirety and non-performance of any part or portion of the Contract shall be deemed to be breach of the entire Contract.

The Contractor guarantees that the equipment package under the Contract shall meet the ratings and performance parameters as stipulated in the technical specifications (Section 10) and in the event of any deficiencies found in the requisite performance figures, the Owner may at its option reject the equipment package or alternatively accept it on the terms and conditions and subject to levy of the liquidated damages in terms of Contract documents. The amount of liquidated damages so leviable shall be in accordance with the contract document and without any limitation.

It is further agreed by the contractor that the contract performance guarantee shall in no way be constructed to limit or restrict the owner's equipment right to recover the damages/compensation due to shortfall in the equipment performance figures as stated in Para 3.6 above or under any other clause

of the agreement. The amount of damages/compensation shall be recoverable either by way of deduction from the contract price, contract performance guarantee and or otherwise. The contract performance guarantee furnished by the contractor is irrevocable and unconditional and the owner shall have the power to invoke it notwithstanding any dispute or difference between the owner and the contractor pending before any court tribunal, arbitrator or any other authority.

This Agreement constitutes full and complete understanding between the parties and terms of the payment. It shall supersede all prior correspondence terms and conditions contained in the Agreement. Any modification of the agreement shall be affected only by a written instrument signed by the authorized representative of both the parties.

SETTLEMENT OF DISPUTES

It is specifically agreed between parties that all the differences or disputes arising out of the agreement or touching the subject matter of the agreement shall be decided by process of settlement and Arbitration as specified in clause 41 of the General Condition of the Contract and provision of the Indian Arbitration Act, 1996 shall apply. Guwahati Courts alone shall have exclusive jurisdiction over the same.

NOTICE OF DEFAULT

Notice of default given by either party to the other under agreement shall be in writing and shall be deemed to have been duly and properly served upon the parties hereto if delivered against acknowledgement or by telex or by registered mail with acknowledgements due addressed to the signatories at the addresses mentioned at Guwahati.

IN WITNESS WHEREOF, the parties through their duly authorized representatives have executed these presents (execution where of has been approved by the competent authorities of both the parties) on the day, month and year first above mentioned at Guwahati.

WITNESS:

- 1. (Owner's signature) (Printed Name)
- 2. (Designation)(Company's Stamp)
- 3. (Contractor's Signature) (Company's Name)
- 4. (Designation)(Company's Stamp)

- Applicable in case of single award is placed on one party on Supply-cum- Erection basis. In two separate awards are placed on single party/two different parties this clause is to be modified suitably while signing the contract agreement to be signed separately for two awards to incorporate cross fall breach clause.

Annexure 8: Format for List of Ongoing and Completed Projects in 1) APDCL & othersuccessor Companies of ASEB and 2) Outside the State of Assam

(To be submitted by all the Partners of the Joint Venture)

SL No.	Name of Company	Name of Work	Contract Value (inRs.)	Date of Letter of Award/ Work Order	Expected Date of Completion of Work (as per work order)	Actual Date of Completion of Work (attach completion certificate from Client)	Physical Progress (%)
1.							
2.							
3.							
4.							
5.							

Annexure 9: Format for Summary of Audited Financial Statements distinctly indicating the revenue heads and Annual Turnover for the last 3(three) consecutive FYs for each member of the Joint Venture

FORM FIN-1

Financial Data for Previous 3 Years [Rs in lakhs]		
Year 1: 2019-20	Year 2: 2020-21	Year 3: 2021-22

Information from Balance Sheet

Total Assets			
Total Liabilities			
Net Worth			
Current Assets			
Current Liabilities			

Form FIN - 2: Average Annual Turnover

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

Annual Turnover Data for the last 3 Years	
Year	Amount (Rs. In lakhs)
2019-20	
2020-21	
2021-22	
Average Annual Turnover	

The information supplied shall 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 contracts in progress or completed in ₹ (Rupees).

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 3 (Evaluation and Qualification Criteria)

Financial Resources		
No.	Source of financing	Amount (Rs. In lakhs)
1		
2		
3		

- All the information furnished above shall be CA (Chartered Accountant) certified and duly supplemented by Audited Balanced sheet for the respective financial years.

Annexure 10: Information regarding Bid Capacity

A. Format for assessing the Bid Capacity of the Bidders to calculate the value of "A"

**AFFIDAVIT
(To be executed on non-Judicial stamp paper)**

I/We aged Yearss onof do hereby solemnly affirm
And declare for and on behalf of the Firm that following are the list
of Electrical Construction Projects (Turnkey projects/Item rate contract/Construction
works) with respect to APDCL/other Utility undertaken by the Bidder during the last
5 years.

SL No.	Financial Year	Total value of Electrical works done during the year (excluding advance such as mobilisation advance etc.) ** Rs. in Lakhs	Factor for updating to current price level (Rs. InLakhs)	Updated Value of the Work (Rs.in Lakhs)
		<i>A</i>	<i>B</i>	<i>C=AxB</i>
1	2021-22		1.00	
2	2020-21		1.10	
3	2019-21		1.21	
4	2018-19		1.331	
5	2017-18		1.464	
Maximum Value of work in one FY during last 5 FYs (Rs. in Lakhs)				

** Figures to be mentioned in the Column A shall be supported by relevant copies of the Work Order/LOA as well as the corresponding Completion Certificates issued by the officer not below the rank of **CEO/DGM/Superintending Engineer** of the Public Utilities.

Maximum value of projects that have been undertaken during the F.Y. out of the last 5 years and the value of the projects updated to the current price level (i.e. FY 2018-19) thereof is Rs Lakhs (Rupees in words).

..... Signature, name, and designation of Authorized Signatory For and on behalf of(Name of the Bidder) Date: Place

B. Format for assessing the Bid Capacity of the Bidders to calculate the value of "B"**AFFIDAVIT
(To be executed on non-Judicial stamp paper)**

I/We aged Years on of do hereby solemnly affirm and declare for and on behalf of the Firm that following is the list of all the existing commitments and ongoing works (Turnkey projects/Item rate contract/Construction works) with respect to APDCL/other Utility that are to be completed during the next 3(three) years.

SL No	Name of Project / Work	Percent age of participation of Bidder in the project	Date of commencement of Project	Stipulated date of Completion	Value of the contract as per Contract Agreement /LOA	Value of work completed **	Balance value of work to be completed	Balance value of work at current price level (FY2018-19)
					Rs. in Lakhs	Rs. in Lakhs	Rs. in Lakhs	Rs. in Lakhs
1	2	3	4	5	6	7	8= (6-7)	9 (3x 8 x #)

** All relevant Certificates will required to be duly signed by the officer not below the rank of **CEO/DGM/Superintending Engineer** of Public utilities.

Updating Factor as given below:

F.Y.	Updating Factor
2021-22	1.00
2020-21	1.10
2019-20	1.21
2018-19	1.331
2017-18	1.464

The Statement showing the value of all existing commitments and ongoing works as well as the value of work completed for each of the works mentioned above is verified from the certificate issued by the Engineer not below the rank of CEO/DGM in respect of APDCL Projects **or** Superintending Engineer in respect of Projects in other Public Utilities. No awarded/ ongoing works has been left in the aforesaid statement which has been awarded to M/s.....individually/as partner, in case of Joint Venture, as on due date of submission for this tender.

..... Signature, name, and designation of Authorized Signatory For and on behalf of (Name of the Bidder) Date: Place
--

Annexure 11 : Format for Certificate of Skilled Technical Manpower

[To be submitted individually for each partners of the Joint Venture indicating the number of skilled manpower for relevant technical skillset.]

[On the Official Letterhead of the Company/firm]

[ReferenceNo.]

From: [Address of the Bidder]

[Telephone No., FaxNo.Email] [Date]

To

The CGM (PP&D)
Assam Power Distribution Company
Limited 6th Floor, Bijulee Bhawan,
Paltanbazar Guwahati, Assam

Sub: Certificate of SkilledHumanResource [Insert name of JVpartner].

Ref: Your Tender No. dated (the "BID DOCUMENT").

Dear Sir,

This is to certify that [Insert name of JV Partner] having its Registered Office at [Insert RegisteredAddress of the JVPartner] with PAN No. [Insert PAN No.] are in the businessof [Insertbriefly the nature of the business], and has the following skilled human resource related to the nature of the BID DOCUMENT:

Sr. Name Qualification Area of Expertise Years of Experience

SN	Name of Personnel	Qualification	Area of expertise	Years of experience
1				
2				
3				
4				
5				

This is to certify that the abovementioned information is true to the best of my knowledge.

Thankingyou,

[Official seal of the Company/firm] Date: [Date]

Sincerely yours,

Place: [Place]

-----End of Forms of Bid-----