BIDDING DOCUMENT

FOR

Supply of clamps, connectors and hardware fittings for Lower Assam Region in AEGCL

ASSAM ELECTRICITY GRID CORPORATION LIMITED

BID IDENTIFICATION NO:
AEGCL/MD/O&M/Clamps & Connectors/LAR/2021/BID

SECTION 1

INSTRUCTION TO BIDDERS

Corporate Office,
Assam Electricity Grid Corporation Limited, Bijulee Bhawan,
Paltan Bazar, Guwahati-781001
PHONE: 0361-2739520 FAX NO.0361-2739513
Web: www.aegcl.co.in Email: managing.director@aegcl.co.in

1.1.0 INTRODUCTION:

The Chief General Manager (PP&D) on behalf of Assam Electricity Grid Corporation Ltd(AEGCL), hereinafter referred to as AEGCL or Purchaser invites single stage two envelope e-bids for the following work from eligible firms/companies/ contractors.

a) Name of work: **Supply of clamps, connectors and hardware fittings for Lower Assam Region in AEGCL.**

1.2.0 INTENT OF THE TENDER ENQUIRY:

The intent of the Tender Enquiry is to invite proposals from the prospective and relevantly experienced and financially sound contractor(s) /firms to carry out the works as specified in this bidding document.

1.3.0 SCOPE OF WORK:

The major scopes of work are as follows:-

a) Design, Supply, delivery of clamps and connector to AEGCL site.

b) Arrangements of any permits required for transportation and movment of supplied materials. However, AEGCL shall assist as far as practicable in the process.

1.4.0 TIME SCHEDULE:

The successful bidder shall have to complete the works within **4 (Four) months** from the date of contract commencement. Bidder must submit a completion schedule bar chart for activities to complete the work within this time schedule.

1.5.0 ESTIMATE:

Rs. 91,61,969.00 (Rupees Ninty One Lakh Sixty One Thousand Nine Hundred Sixty Nine only) including taxes).

1.6.0 ELIGIBILITY CRITERIA:

1.6.1. GENERAL

Bidder may be manufacturer of the offered products or a firm/company having authorisation from a manufacturer. In case the bidder is not a manufacturer of the offered products, bidder must submit manufacturer's authorisation using for that purpose Form-MA provided in Section-2 Bidding forms.

1.6.2. EXPERIENCE

To be qualified for the bid the bidder must compulsorily meet the following minimum criteria specified in (i), (ii) and (iii) below:.

i. Bidder OR if the bidder is not a manufacturer, offered product's manufacturer must have least Five years of experience in design, manufacture and supply of 400 KV or above class clamps and connectors. Bidder shall submit filled up form EXP-1 along with copy of past orders to establish its eligibility.

ii. Bidder OR offered product's manufacturer must have experience of executing a similar work successfully in past five years having –

a. One such order having order value equal or more than the estimate value.

OR

b. Two orders having total order value equal to or more than the estimate value.

OR

c. Three orders having total order value equal to or more than the estimate value.

Bidder shall submit filled up form EXP-2 along with copy of past orders and completion certificate/delivery Challan with customer signature to establish its eligibility.

iii. Bidder must have experience of executing a supply order of electrical items in Govt agency within past five years. Bidder shall submit filled up form EXP-3 along with copy of past orders and completion certificate/delivery Challan with customer signature to establish its eligibility.

Joint venture is not allowed for this bid.

1.6.3. FINANCIALS:

i. As a minimum, a Bidder's net worth calculated as the difference between total assets and total liabilities should be positive. As supporting document, bidder should submit audited balance sheets or other financial statements acceptable to the Purchaser, for last 3 (three) financial years to demonstrate the current soundness of the Bidders financial position and its prospective long-term profitability. Apart from audited balance sheet, bidder shall submit duly filled and signed **Form 'FIN-1**' given in Section 2. Using the 'Form LIT – 1' (Section 2, Bidding Form), bidder shall list all Pending Litigation. All pending litigation shall be treated as resolved against the Bidder and so shall in total not represent more than 50% percent of the Bidder's net worth.

ii. Bidder must have minimum **Average Annual Turnover (AAT) of Rs. 90,00,000.00 (Rupees Ninety Lakh)**. AAT shall be calculated by averaging total certified payments received for contracts in progress or completed, for the last 3 (three) years. The bidder shall furnish, along with its bid, audited balance sheets and duly filled up Form '**FIN-2'** in support of this Clause.

iii. Bidder must demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet:

(a) the following cash-flow requirement, **Rs. 80,00,000.00**, and

(b) the overall cash flow requirements for this contract and its current works commitment. .

Bidder must submit duly filled and signed **Form FIN-3 & FIN-4** of section 2 in support of this clause.

1.6.4. TYPE TEST REPORT:

The offered product(s) must be type tested at CPRI or NABL accredited laboratory for critical performance at the time of bid submission. Bidder must submit full type test reports for the offered products along with the techmno-commercial bid.

1.7.0 SITE VISIT:

The bidders are advised to visit and examine the sites of work and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid. The costs of visiting the Site shall be at the bidder's own expense.

1.8.0 QUANTUM OF WORK:

The quantum of work is stated in the PRICE SCHEDULE at the end of section 2 – bidding forms. Tentative delivery locations shall be -

1) 132 KV Dhaligaon GSS, PIN- 783380
2) 220 KV Sarusajai GSS, PIN – 781040
3) 400 KV Mirza (Kukurmara) GSS, PIN – 781125

Actual quantity to be delivered at each delivery destination shall be intimated at the time of dispatch clearance.

1.9.0 QUERY ON THE BIDDING DOCUMENT:

Prospective bidder may submit queries, if felt necessary, requesting clarification of any bid clause. Such queries must be submitted in the etendering portal latest by the **Tender clarification end date and time** mentioned in the Bid Data Sheet. Purchaser shall clarify to the extent felt necessary or issue corrigendum for any amendment required in the bidding document. Such corrigendum/clarification shall be made available in the etendering portal and official website of AEGCL, www.aegcl.co.in . Any query submitted outside the etender portal viz. email, or in physical letters, shall not be entertained.

1.10.0 CLARIFICATION OF BIDS

To assist in the examination, evaluation, and comparison of the Technical and Price Bids, and qualification of the Bidders, the Purchaser may, at its discretion, ask any Bidder for a clarification of its bid. Any clarification submitted by a Bidder that is not in response to a request by the Purchaser shall not be considered. The Purchaser's request for clarification and the response shall be in writing. No change in the substance of the Technical Bid or prices in the Price Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Purchaser in the evaluation of the bids. If a Bidder does not provide clarifications of its bid by the date and time set in the Purchaser's request for clarification, its bid may be rejected.

1.11.0 DEADLINE FOR SUBMISSION OF BIDS

Bids shall be received ONLINE only on or before the date and time indicated in the **Bid Data Sheet** The Purchaser may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Document, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

1.12.0 SUBMISSION OF BID:

The bidder shall submit the techno commercial & price bid through e-tendering portal **https://assamtenders.gov.in**. All documents as required by this bidding document shall be scanned and uploaded in the portal. Price schedule should be submitted in the format provided in the online portal. Bidder must go through the document checklist provided in this bidding document and submit all required document. Bidders are also requested to submit the informations in the format provided in this bidding document where applicable.

In addition to the online bid submission, (i) Original copy of **EMD**, (ii) Duly filled and signed **tender submission form** and (iii) **Authorization letter of bid signatory** must be submitted in a sealed envelope superscribed with the name of bidder, full address, IFB reference, name of work etc. at the office of the Managing Director, Assam Electricity Grid Corporation Ltd, Bijulee Bhawan, Paltan Bazar Guwahati-781001 **one hour prior to bid submission end date and time**. **In case these documents are not received, the bid shall be summarily rejected.**

1.13.0 BID VALIDITY

The validity of bid shall be for **180(One Hundred Eighty) days** from the date of bid submission end date.

1.14.0 OPENING OF TECHNO-COMMERCIAL BIDS

The Purchaser shall conduct the opening of Technical Bids through online process at the address, date and time specified in the BDS. Bidders at their discretion may attend the techno-commercial bid opening.

Price bid of those bidders shall only be opened whose techno-commercial bids are found to be responsive to the requirement of the bidding document.

1.15.0 EARNEST MONEY DEPOSIT (EMD):

The bid must be accompanied with earnest money as mentioned in the **Bid Data Sheet** against the works to be deposited in the form of Bank Guarantee (BG) of Nationalized or scheduled Bank **OR** FD/Term Deposit pledged in favour of "The Managing Dircetor, AEGCL". The EMD should be submitted along with Techno-Commercial bid. The earnest money will be released to the unsuccessful bidders on finalization of the tenders. The EMD to the successful bidder will be released on submission of Security Deposit after execution of the contract agreement.

1.16.0 PRICE BASIS:

Cost quoted by the bidder shall be inclusive of all scope of work as specified in this biding document including any related services that is implicit to carry out the work successfully. Price will be firm and no price variation will be allowed within the completion period given in the work order.

1.17.0 DEVIATIONS, RESERVATIONS, AND OMISSIONS:

During the evaluation of bids, the following definitions apply:

a) "Deviation" is a departure from the requirements specified in the Bidding Document;

b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and

c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.

1.18.0 PRELIMINARY EXAMINATION OF TECHNICAL BIDS:

The Purchaser shall examine the Techno-commercial Bid to confirm that all documents and technical documentation requested in this bidding document have been provided, and to determine the completeness of each document submitted. If any of these documents or information is missing, **the Bid may be rejected.**

The Purchaser shall confirm that the following documents and information have been provided in the Technical Bid. If any of these documents or information is missing, the offer ***shall be rejected***.

(a) Original copy of **EMD**,

(b) Duly filled and signed **tender submission form** and

(c) **Authorization letter of bid signatory**

Bidder should submit hard copies of the documents mentioned above in (a), (b) and (c) in a physical envelope prior to deadline for technical bid submission. Techno-commercial bids shall be summarily rejected if these three documents are not submitted in hard copy deadline for technical bid submission.

1.19.0 RESPONSIVENESS OF TECHNO-COMMERCIAL BID:

The Purchaser's determination of a bid's responsiveness is to be based on the contents of the bid itself. A substantially responsive Techno-commercial Bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,

a) if accepted, would:

(i). Affect in any substantial way the scope, quality, or performance of the plant and services specified in the Contract; or

(ii). Limit in any substantial way, inconsistent with the Bidding Document, the Purchaser's rights or the Bidder's obligations under the proposed Contract; or

b) If rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.

The Purchaser shall examine the Techno-commercial Proposal, to confirm that the requirement of the bidding document have been met without any material deviation or reservation.

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

1.20.0 EVALUATION OF PRICE BIDS:

The Purchaser shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be used.

To evaluate a Price Bid, the Purchaser shall consider the following:

a) The bid price excluding taxes as quoted in the Price Schedules;

b) Price adjustment for correction of arithmetical errors.

1.21.0 AWARD CRITERIA:

Purchaser shall in general award the contract to the lowest substantially responsive bidder. However, the purchaser reserves the right to not award contract to the lowest substantially responsive bidder without thereby incurring any liability to Bidders.

1.22.0 PURCHASER'S RIGHT TO ACCEPT ANY BID, AND TO REJECT ANY OR ALL BIDS:

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

1.23.0 NOTIFICATION OF AWARD:

Prior to the expiration of the period of bid validity, the Purchaser shall notify the successful Bidder, in writing, that its bid has been partially or fully accepted quoting acceptance of the bid. The notification letter (hereinafter called the "Notification of Award") shall specify the sum that the Purchaser will pay the Contractor (hereinafter called "Contract Price") in consideration of the execution and completion of the services. Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.

1.24.0 PERFORMANCE SECURITY:

Within 15 (five) days of receipt of the Notification of Award from AEGCL, the successful bidder shall furnish to AEGCL a performance security in an amount of 10 (ten) percent of the Contract Price in accordance with the Conditions of Contract. The form of performance security provided in Section 3 of the bidding documents may be used or some other form acceptable to AEGCL. The performance guarantee BG shall be valid through 30 days beyond the guarantee period.

1.25.0 SIGNING OF CONTRACT AGREEMENT:

Within **15 (Fifteen) days** of receipt of the Notification of Award, the successful Bidder shall be required to sign the Contract Agreement with AEGCL using for that purpose, the contract form provided with this bidding document failing which AEGCL at its discretion may cancel the award.

Annexure to SECTION 1
BID DATA SHEET

Name of Work	Supply of clamps, connectors and hardware fittings for Lower Assam Region in AEGCL
Location of Work	Assam
NIT No.	AEGCL/MD/CGM (O&M)/CCT&P Materials/2020/11 dtd. 07.05.2021
Bid Identification No.	AEGCL/MD/O&M/Clamps & Connectors/LAR/2021/BID
Estimate(In Indian Rupees)	**Rs. 91,61,969.00** (Rupees Ninty One Lakh sixty One thousand Nine Hundred Sixty Nine only) including taxes).
Earnest Money Deposit(EMD	**Rs. 90,000.00** (Rupees Ninety Thousand) Only
Purchase'sAddress for correspondance	**The Chief General Manager(PP&D), AEGCL** **1st Floor, Bijulee Bhawan, Paltanbazar** **Guwahati(Assam)** **781001** Telephone: +91 361 2739520 Facsimile number: +91 361 2739513 Electronic mail address: cgm.ppd@aegcl.co.in
Pre-bid date	Shall be notified, if any, in due course.
Bid submission mode	E-tenders shall be accepted through online portal **https://assamtenders.gov.in** only)
Address for bid opening	**The Chief General Manager(PP&D), AEGCL** Floor/Room number: **First Floor** Street Address: **Bijulee Bhawan, Paltanbazar** City: **Guwahati (Assam)** PIN Code: **781001** Country: **India**
Key dates	**Tender publishing date: 10:00 Hrs., 08.05 .2021** **Tender submission start date: 10:00 Hrs., 21.05 .2021** **Tender clarification end date: 17:00 Hrs., 19.05 .2021** **Tender submission end date and time: 12:00 Hrs., 02.06 .2021** **Techno-cmmercial bid opening date: 14:00 Hrs., 04.06. .2021**

SECTION -2 BIDDING FORMS

(This Section contains the forms which are to be completed by the Bidder and submitted as part of his Bid)

Form – 1
Document checklist

SL. No.	Document to be submitted	Submitted(Yes/No)	Name of uploaded pdf
1.	Letter of technical bid(Form-2)		
2.	Notarised Power of attorney for the person signing the tender		
3.	Bank Gurantee for EMD (Form-3)		
4.	Bidders company/firm registration certificate/certificate of incorporation		
5.	Manufacturer's authorization (Form MA) (Applicable for bidder who is not manufacturer of offered prodyuct)		
6.	GST registration		
7.	Filled up Form ELI-1		
8.	Filled up Form LIT		
9.	Filled up Form FIN-1		
10.	Filled up Form FIN-2		
11.	Filled up Form FIN-3		
12.	Filled up Form FIN-4		
13.	Audited Balance sheet for last three years		
14.	Bank solvency certificate/other supporting document		
15.	Filled up Form EXP-1		
16.	Order/Contract copies establishing supplying offered product in past		
17.	Performance certificate of offered product		
18.	Document establishing manufacturing unit details		
19.	GTP and drawings		
20.	Type test reports		
21.	Completion schedule bar chart		
22.	Additional documents if any		

Note: Bidders are requested to submit all required documents in e-tender portal and **physical copies of i) Letter of technical bid, ii) EMD and iii) Power of Attorney(notarized) for bid signatory to Tender inviting authority.**

(In bidders letterhead)

Form-2
Letter of technical bid

Date:

To

The Chief General Manager (PP&D)
AEGCL, 1st Floor, Bijulee Bhawan,
Paltan Bazar, Guwahati-01

Bid Identification No: AEGCL/MD/O&M/Clamps & Connectors/LAR/2021/BID

Sir,

I/We the undersigned, declare that, we, [insert name of the bidder] having registered office at [insert address of the registerd office] are established manufacturer/supplier of clamps & Connectors/electrical items.

I/we have read the bid document and do not have any reservation to any of the clause therein. We offer to excute the work of:

Supply of clamps, connectors and hardware fittings in AEGCL

in conformity with the bid specification. Our Bid shall be valid for a period of **180(One Hundred Eighty)** days from the date fixed for the bid submission deadline and it shall remain binding upon us at any time before the expiration of that period.

Common Seal and Signature of the authorised person:
Name:
Designation:

Note:
i) Insert name and address in appropriate places.
ii) Strike out which is not applicable.

Form - 3

Format for Bank Guarantee (Earnest money deposit)

Bank Guarantee
(To be stamped in accordance with Stamp Act)
(The non-Judicial Stamp Paper should be in the name of issuing Bank)

Bank's Name:
Address of Issuing Branch or Office:
Email id and phone no for correspondence:

Beneficiary: The Managing Director, AEGCL
Name and Address of Purchaser

Bid Security No.:

We have been informed that . . . . . *name of the Bidder. . . . .* (Hereinafter called "the Bidder") intends to submit to you its bid against *Bid ref* . . . . . for Supply installation, testing & commissioning of solar street light system.

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

(a) has withdrawn its Bid during the period of bid validity specified by the Bidder in the Form of Bid; or
(b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or
(c) having been notified of the acceptance of its Bid by the Purchaser during the period of bid validity, (i) fails or refuses to execute the Contract Agreement, or (ii) fails or refuses to furnish the Performance Security, in accordance with the ITB.

This guarantee will expire: (a) if the Bidder is the successful Bidder, upon our receipt of copies of the Contract Agreement signed by the Bidder and the performance security issued to you upon the instruction of the Bidder; and (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy your notification to the Bidder of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of the Bidder's bid.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

BG expiry date:
BG clam date:

Bank's seal and authorized signature(s)

NOTE

1. *All italicized text is for use in preparing this form and shall be deleted from the final document. An amount is to be inserted by the Guarantor, representing the EMD amount as per bid.*
2. *This guarantee shall be valid upto 30 days beyond the bid validity.*
3. *For BG amount equal to or more than 50,000.00, BG should be signed by two bank officers to be valid.*
4. *Address of the banker with email and phone number for correspondence with banker should be clearly mentioned. Any correspondence related to the BG with the banker shall be made to the address mentioned in the BG.*

Form 4

Manufacturer's Authorization

(To be submitted in Manufacturer's Letterhead)

Bid No.: AEGCL/MD/O&M/Clamps & Connectors/LAR/2021/BID

To

The Chief General Manager (PP&D)
AEGCL, 1st Floor, Bijulee Bhawan,
Paltan Bazar, Guwahati-01

WE *[insert: **name of Manufacturer**]* who are established and reputable manufacturers of *[insert: **name and/or description of the Goods**]* having production facilities at *[insert: **address of factory**]* do hereby authorize *[insert: **name & address of Bidder**]* (hereinafter, the "Bidder") to submit a bid the purpose of which is to provide the following goods, manufactured by us, and to subsequently negotiate and sign the Contract:

1. ----------

2. ----------

We hereby extend our full guarantee and warranty in accordance with ***Clause 5.11.0*** of the Special Conditions of Contract, for the above specified Goods supporting the Supply of specified Goods and fulfilling the Related Services by the Bidder against this Bidding Documents, and duly authorize said Bidder to act on our behalf in fulfilling these guarantee and warranty obligations. We also hereby declare that, we will furnish the Performance Guarantee in accordance with ***SCC Clause* 5.9.0 .**

Further, we also hereby declare that we and, *[insert: **name of the Bidder**]* have entered into a formal relationship in which, during the duration of the Contract (**including related services and warranty / defects liability**) we, the Manufacturer or Producer, will make our technical and engineering staff fully available to the technical and engineering staff of the successful Bidder to assist that Bidder, on a reasonable and best effort basis, in the performance of all its obligations to the Purchaser under the Contract.

For and on behalf of the Manufacturer

Common Seal and Signature of the authorised person:
Name:
Designation:

NOTE:
This MA should be signed by a person having either of the following-
1) Valid Power of attorney
2) Authorised by Managing Director
3) Member of Board of Directors

Form-ELI-1
Bidder's information Sheet

Sl. No.	Particulars	Bidders response
1	Bidders name and registered address	
2	Bidders authorised representative, designation and contacts	
3	GST registration no.	
4	MSME/SSI registration Udyog Adhaar/NSIC registration available?	Yes/No
5	EMD exemption claimed	Yes/No

(Signature and common seal)
Name:
Designation:
Date:

Form – LIT
Pending Litigation

Year	Matter in Dispute	Value of Pending Claim in Rupees	Value of Pending Claim as a Percentage of Net Worth

(Signature and common seal)
Name:
Designation:
Date:

Form FIN – 1
Financial Situation

Information from Balance Sheet

Financial Data for Previous 3 Years [Rupees]	Year 1 [Mention Financial Year]	Year 2 [Mention Financial Year]	Year 3 [Mention Financial Year]
Total Assets			
Total Liabilities			
Net Worth			
Current Assets			
Current Liabilities			

Information from Income Statement

Total Revenues			
Profits Before Taxes			
Profits After Taxes			

Note: To be supported by audited financial documents

(Signature and common seal)
Name:
Designation:
Date:

Form FIN – 2
Average Annual Turnover

Annual Turnover Data for the Last 3 Years	
Year	**Amount (Rupees)**
Average Annual Turnover	

The information supplied should be the Annual Turnover of the Bidder in terms of the amounts billed to clients for each year for contracts in progress or completed.

(Signature and common seal)
Name:
Designation:
Date:

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 cash flow demands of the subject contract or contracts with necessary supporting documents.

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

(Signature and common seal)
Name:
Designation:
Date:

Form FIN- 4
Current Contract Commitments

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

No.	Contract No., Customer and name of work	Contract value(Rs.)	Estimated Completion Date	Value of Outstanding Work (Rs.)
1				
2				
3				
4				
5				

Form – EXP-1

Bidder must fill this form to establish eligibility as per clasue 1.6.2(i)

Sl. No.	Customer name	Contract No. and date	Work order value	Contractor/supplier	Brief description of work

Note: Order/contract copies are to be submitted as supporting document.

(Signature and common seal)
Name:
Designation:
Date:

Form – EXP-2

Bidder must fill this form to establish eligibility as per clasue 1.6.2(ii)

Sl. No.	Customer name	Contract No. and date	Work order value	Contractor/ supplier	Brief description of work	Completion date

Note: Following documents are to be submitted as supporting document:

i) Relevant order/contract copies.
ii) Completion certificate or Delivery Challan with customer signature.

(Signature and common seal)
Name:
Designation:
Date:

Form – EXP-3

Bidder must fill this form to establish eligibility as per clasue 1.6.2(iii)

Sl. No.	Customer name	Contract No. and date	Work order value	Contractor/ supplier	Brief description of work	Completion date

Note: Following documents are to be submitted as supporting document:

i) Relevant order/contract copies.
ii) Completion certificate or Delivery Challan with customer signature.

(Signature and common seal)
Name:
Designation:
Date:

Price schedule - 1

All prices are in Indian Rupees

Sl. No	Items/Particulars	Unit	Qty	Unit rate (Supply)	Unit F&I	Total
1	**T-Clamp**					
1.1	Moose to Moose	Nos	15			
1.1	Moose to Zebra	Nos	3			
1.2	Panther to Panther	Nos	86			
1.3	Panther to Moose	Nos	12			
1.4	Zebra to Zebra	Nos	126			
1.5	Zebra to Panther	Nos	69			
1.6	Panther to Raccoon	Nos	0			
1.7	Panther to Wolf	Nos	0			
1.8	Raccoon to Raccon	Nos	0			
1.9	132KV T-clamp for twin panther	Nos	0			
2	33KV T-clamp for twin panther	Nos	0			
2.1	132KV CT clamp for twin panther	Nos	0			
2.2	33KV CT clamp for twin panther	Nos	0			
2	**UPG Clamp**					
2.1	Moose to Moose	Nos	15			
	Moose to Zebra	Nos	6			
2.2	Panther to Panther	Nos	466			
2.3	Panther to Moose	Nos	23			
2.4	Zebra to Zebra	Nos	338			
2.5	Zebra to Panther	Nos	21			
2.6	Wolf to Wolf	Nos	32			
2.7	Raccoon to Raccon	Nos	50			
2.8	Raccoon to Panther	Nos	18			
3	**CT Clamp**					
3.1	Single Moose for 220kV	Nos	14			
3.2	Twin ACSR Moose for 220kV	Nos	14			
3.3	Single ACSR Moose for 132kV	Nos	11			
3.4	Twin ACSR Moose for 132kV	Nos	11			
3.5	Single ACSR Panther for 132kV	Nos	138			
3.6	Single ACSR Panther for 33kV	Nos	140			
3.7	132kV CT Clamp(T-type) (Zebra)	Nos	38			
3.8	33kV CT Clamp(U Bolt type) (Panther)	Nos	39			
3.8	132kV CT Clamp(T-type) (Panther)	Nos	40			
3.9	Single AAAC Zebra for 33kV	Nos	253			
4	Twin Panther for 132kV	Nos	0			
4.1	Twin Panther for 33kV	Nos	0			
4.2	66kV Clamps for CT	Nos	0			
4	**Circuit Breaker**					
4.1	Twin ACSR Moose for 220kV	Nos	12			
4.2	Twin Zebra for 220kV	Nos	12			
4.3	Single Moose for 132kV	Nos	26			
4.4	Single Zebra for 132kV	Nos	27			

Sl. No	Items/Particulars	Unit	Qty	Unit rate (Supply)	Unit F&I	Total
4.5	Single Panther for 132kV	Nos	95			
4.6	Single Panther for 33kV	Nos	95			
4.7	Single Zebra for 33kV	Nos	98			
4.8	Single Zebra for 132kV L Type	Nos	20			
4.9	11kV CT Clamp (Panther) L type	Nos	5			
5	**Isolators**					
5.01	Twin Moose for 220kV & 132kV	Nos	13			
5.02	Single Moose for 220kV & 132kV	Nos	9			
5.03	Single Panther for 132kV	Nos	260			
5.04	Single Zebra for 132kV	Nos	205			
5.05	Single Panther for 33kV	Nos	186			
5.06	Single AAAC Zebra for 33kV	Nos	186			
5.07	Twin Panther for 132kV	Nos	0			
5.08	Twin Zebra for 132kV	Nos				
5.09	Twin Panther for 33kV	Nos	0			
5.10	Twin Zebra for 33kV	Nos				
5.11	132KV Isolator clamp for Siemens make isolator	Nos	26			
5.12	132KV Isolator Female head for Siemens make isolator	Nos	3			
5.13	220KV Isolator Female head for Siemens make isolator	Nos	3			
5.14	33kV isolator jumper clamp(U bolt type)	Nos	23			
5.15	33kV GR Power Isolator(Moving contact assembly)	Nos	18			
5.16	33kV GR Power Isolator(Fixed contact assembly)	Nos	18			
5.17	33kV GR Power Isolator(Copper profile tip)	Nos	18			
5.18	33kV S&S Isolator (Moving contact)	Nos	18			
5.19	33kV S&S Isolator (Fixed contact)	Nos	18			
5.2	132kV GR Power Isolator Spare Parts	Nos	18			
5.21	11KV ISO PAD Clamp (Panther)	Nos	5			
5.22	66kV Isolator clamp for panther	Nos				
5.23	Twin Zebra Isolator clamp as per sample wt. 6.5 Kgs	Nos	6			
6	Wave Trap Clamp for Panther Conductor	Nos	18			
7.1	220kV & 132kV PI Clamps for Twin Moose	Nos	9			
7.2	220kV & 132kV PI Clamps for Single Moose	Nos	11			
7.3	220kV & 132kV PI Clamps for Twin Zebra	Nos	11			
7.4	220kV & 132kV PI Clamps for Single Zebra	Nos	9			
7.5	132kV PI Clamps for Twin Panther	Nos	9			
7.6	132kV PI Clamps for Single Panther	Nos	9			
8	**Bolted Type Tension Clamp**					
8.1	Twin ACSR Moose 220kV	Nos	6			
8.2	Twin ACSR Moose 132kV	Nos	6			
8.3	Single Zebra 132kV	Nos	8			
8.4	Single Panther 132kV	Nos	8			
9	**Compression Type Tension Clamp for Single Panther 132kV**	Nos	6			
10	**Mid Span Joint**					
10.1	AAAC Panther	Nos	6			

Sl. No	Items/Particulars	Unit	Qty	Unit rate (Supply)	Unit F&I	Total
10.2	AAAC Zebra	Nos	6			
10.3	ACSR Panther	Nos	6			
10.4	ACSR Zebra	Nos	6			
11	**Suspension Clamp for Single Zebra ACSR/AAAC 132kV**	Nos	6			
11.1	**Suspension Clamp for Single Panther ACSR/AAAC 132kV**	Nos	6			
11.2	**Suspension Clamp for double Panther ACSR/AAAC 132kV**	Nos	6			
12	**Single Tension Hardware fitting**					
12.1	AAAC Panther	Nos	18			
12.2	AAAC Zebra	Nos	18			
12.3	ACSR Panther	Nos	18			
12.4	ACSR Zebra	Nos	18			
13	**Double Tension Hardware fitting**					
13.1	AAAC Panther	Nos	18			
13.2	AAAC Zebra	Nos	18			
13.3	ACSR Panther	Nos	18			
14	**Jumper Cone**					
14.1	AAAC Panther	Nos	9			
14.2	AAAC Zebra	Nos	15			
14.3	ACSR Panther	Nos	6			
14.4	ACSR Zebra	Nos	6			
15	**Aluminium Binding Tape**	Kgs	15			
16	**Repair Sleeve**					
16.1	AAAC Zebra	Nos	6			
16.2	AAAC Panther	Nos	6			
16.3	ACSR Panther	Nos	6			
17	**Come-along Clamp**					
17.1	AAAC Zebra	Nos	5			
17.2	AAAC Panther	Nos	5			
17.3	Ground Wire	Nos	5			
20	**Tension Clamp for Ground Wire**	Nos	5			
21	**Suspension Clamp for Ground Wire**	Nos	5			
22	**Nut & Bolt with Double Washer**					
22.1	M16 × 55	Kgs	19			
22.2	M16 × 45	Kgs	19			
22.3	M10 × 50 4.6	Kgs	6			
22.4	M10 × 60 4.6	Kgs	6			
22.5	M10 × 65 4.6	Kgs	6			
22.6	M10 × 75 4.6	Kgs	6			
22.7	M12 × 50 5.6	Kgs	6			
22.8	M12 × 60 5.6	Kgs	6			
22.9	M12 × 65 5.6	Kgs	6			
22.10	M12 × 75 5.6	Kgs	6			
22.11	8 × 50 4.6	Nos	6			

Note: The price schedule presented here is for reference only. Bidders must submit the price using the price schedule available in e-tendring portal. This is not to be submitted in the techno-commercial envelope.

Section - 3

Purchaser's Requirements

3.1.0 SCOPE

The brief description of scope of scope covered under this Bidding Document is furnished below:

a) Design, Supply, delivery of clamps and connector to AEGCL site as per bid specification.

b) Arrangements of any permits required for transportation and movment of supplied materials. However, AEGCL shall assist as far as practicable in the process.

3.2.0 SERVICE CONDITIONS

Bidder should note the following climatic and other conditions prevailing in the location of work:

a)	Peak ambient day temperature in still air		: 45°C
b)	Minimum night temperatures		: 0°C
c)	Ground temperatures		: 40°C
c)	Reference ambient day temperature		: 45°C
d)	Relative Humidity	a) Maximum	: 100 %
		b) Minimum	: 10 %
e)	Altitude		: Below1000 M above MSL
f)	Maximum wind pressure		: As per IS: 802 latest code.
g)	Seismic Intensity		: ZONE-V as per IS 1893.

3.3.0 Technical Standards

The offered product and its components must adhere to the applicable standards specified below:

IEC 60071-1:2006, Insulation fits for high-voltage transmission and transformer equipment
IEC 60060-1::2010, High voltage test techniques Part 1: General test requirements
IEC 60587:2007, Test methods for the evaluation of resistance to electrical scarring and erosion of insulation materials applied under severe environmental conditions.
IEC 60507, Manual fouling test for high-voltage insulators for use in AC systems
IEC 60296:2003, Electrotechnical fluids of Unused mineral insulating oils for transformers and switches
IEC 60422 Guidelines for the maintenance and management of transformer oil
IEC 60137:2017 Insulating bushings for AC voltages above 1000 V
IEC 61462:1998, Hollow composite insulators for outdoor and indoor electrical equipment Definitions, test methods, acceptance criteria and design recommendations
IEC 62217:2005, Indoor and outdoor polymer insulators for use at nominal voltages above 1000 V - General definitions, test methods and acceptance criteria

IEC 61463:2016 Bushing Seismic resistance

3.4.0 TECHNICAL SPECIFICATION

3.4.1. SUSPENSION CLAMP FOR AAAC CONDUCTOR (132KV AND 220 KV)

3.4.1.1. SUSPENSION CLAMP

The suspension clamps shall be made of malleable iron or aluminium alloy, hot dip galvanised and shall be suitable to accommodate the conductor together with one set of preformed armour rods. Suitable sheet aluminium liners shall be provided. The suspension clamps shall be designed to avoid any possibility of deforming or damaging the conductor. The lips shall be rounded off and the seating and the bell mouths shall be smooth to avoid corona and radio interference noises. The suspension clamps shall be suitable to carry the bottom part of the arcing horn and to receive the fittings of the insulator string.

The suspension clamps shall be such that the conductor should not slip at a load of 25% of the breaking load of the conductor. The ultimate strength of the clamp for vertical load shall not be less than the failing load of the Disc Insulators.

3.4.1.2. **Suspension Assembly**

The suspension assembly shall be designed, manufactured and finished to give it a suitable shape, so as to avoid any possibility of hammering between suspension assembly and conductor due to vibration. The suspension assembly shall be smooth and without any cuts, grooves, abrasions, projections, ridges or excrescence which might damage the conductor.

The suspension assembly/clamp shall be so designed so that it minimises the static and dynamic stress developed in the conductor under various loading conditions as well as during wind induced conductor vibrations. It shall also withstand power arcs and have required level of Corona/AIV performance.

3.4.2. Single and Double Tension Hardware fittings:

3.4.2.1. **HARDWARE**

Each insulator string assembly shall generally include the following hardware:

Anchor shackle for attachment of suspension string assembly to the tower hanger and tension string assembly to the tower strain plate. Suitable top and bottom yoke assemblies with the arrangement of fixing a set of arcing horns.

- Set of arcing horns
- Suspension or tension clamp
- Bolts, nuts, washers, split pins etc.
- Other fitting s necessary to make the strings complete such as ball clevis, socket clevis, chain links etc.

The tenderer shall be responsible and satisfy himself that all the hardware included in strings are entirely suitable for the conductor offered.

3.4.2.2. **SUSPENSION CLAMP**

The suspension clamps shall be made of malleable iron or aluminium alloy, hot dip galvanised and shall be suitable to accommodate the conductor together with one set of preformed armour rods. Suitable sheet aluminium liners shall be provided. The suspension clamps shall be designed to avoid any possibility of deforming or damaging the conductor. The lips shall be rounded off and the seating and the bell mouths shall be smooth to avoid corona and radio interference noises. The suspension clamps shall be suitable to carry the bottom part of the arcing horn and to receive the fittings of the insulator string.

The suspension clamps shall be such that the conductor should not slip at a load of 25% of the breaking load of the conductor. The ultimate strength of the clamp for vertical load shall not be less than the failing load of the Disc Insulators.

3.4.2.3. **STRAIN CLAMP**

The bolted strain clamps shall also be made of malleable iron or aluminium alloy; hot dip galvanised, lined with sheet aluminium liners and shall be suitable to accommodate the conductor with necessary binding tapes etc. The lips shall be rounded off carefully and conductor seating and the ball mouth shall be smooth to avoid corona and radio interference noises. Suitable attachment for receiving one side of arcing horns and for connecting to the insulator strings shall be provided.

The strain clamps shall be such that the conductor should not slip at a load of 90% of the breaking load of the conductor. The ultimate strength of the clamp for horizontal load shall not be less than the ultimate strength of the conductor

3.4.2.4. **ARCING HORNS**

Arcing horns of approved size and dimensions shall be provided for every string of insulators. The performance data for arcing horns to be supplied shall be made available to the Employer.

3.4.2.5. **OTHER INSULATOR STRING HARDWARE**

The strength of other string hardware namely anchor shackle, yoke plates, socket-clevis etc. shall be co-ordinated with insulator disc strength.

3.4.2.6. **Interchangeability**

The hardware together with ball and socket fittings shall be of standard design, so that this hardware is interchangeable with each other and suitable for use with disc insulators of any make con1orming to relevant Indian/International Standard.

3.4.2.7. **Corona and RI Performance**

Sharp edges and scratches on all the hardware fittings shall be avoided. All surfaces must be clean, smooth, without cuts and abrasions or projections. The Contractor/Manufacturer must give suitable assurance about the satisfactory corona and radio interference performance of the materials offered by him.

3.4.2.8. **Maintenance**

The hardware fittings offered shall be suitable for employment of hot line maintenance technique so that usual hot line operations can be carried out with ease, speed and safety. The technique adopted for hot line maintenance shall be generally bare hand method & hot stick method. The Bidder should clearly establish in the bid, the suitability of his fittings for hot line maintenance.

The line side yoke plate shall have a notch & a working hole of suitable size. The design of corona control rings/grading ring shall be such that it can be easily replaced by employing hot line maintenance technique.

3.4.2.9. **Designation**

Ball and Socket Designation

The dimensions of the ball and socket shall be 16 mm (Alt-B) designation for 70 KN &90KN Insulators, 20 mm designation for hardware with 120kN & 160 kN Insulators, in accordance with the standard dimensions stated in IS: 2486-(Part-II) /IEC:120. The dimensions shall be checked by the appropriate gauge after galvanising only.

3.4.2.10. **Security Clips and Split Pins**

Security clips for use with ball and socket coupling shall be R-shaped, hump type which provides positive locking 9f the coupling as per IS: 2486-(Part-III)/IEC: 372. The legs of the security clips shall be spread after assembly in the works to prevent complete withdrawal from the socket. The locking device should be resilient, corrosion resistant and of suitable mechanical strength. There shall be no risk of the locking device

being displaced accidentally or being rotated when in position. Under no circumstances shall the locking devices allow separation of fittings.

The hole for the security clip shall be countersunk and the clip should be of such design that the eye of clip may be engaged by a hot line clip puller to provide for disengagement under energised conditions. The force required to pull the security clip into its unlocked position shall neither be less than 50 N (5 kg) nor more than 500 N (50 kg).

Split pins shall be used with bolts & nuts.

3.4.2.11. Arcing Horn for EHV Strings

The arcing horn shall be provided on tower side of the hardware fittings. The same shall be either ball ended rod type or tubular type.

The spark gap shall be so adjusted to ensure effective operation under actual field conditions.

3.4.2.12. Yoke Plates

The strength of yoke plates shall be adequate to withstand the minimum ultimate tensile strength as specified in the bid drawings.

The plates shall be either triangular or rectangular in shape as may be necessary. The design of yoke plate shall take into account the most unfavorable loading conditions likely to be experienced as a result of dimensional tolerances for disc insulators as well as components of hardware fittings within the specified range. The plates shall have suitable holes for fixing corona control rings/grading ring/arcing horn. All the corners and edges should be rounded off with a radius of atleast 3 mm. Design calculations i.e. for bearing & tensile strength, for deciding the dimensions of yoke plate shall be furnished by the Contractor/Manufacturer. The holes provided for bolts in the yoke plate should satisfy shear edge condition as per Clause No. 10.2.4.2 of IS:800-2007.

3.4.2.13. Corona Control Rings/Grading Ring (For 220 kV & above voltage level line)

The Corona control rings/grading ring shall be provided with hardware fittings and shall be of such design that it should cover at least one disc insulator in disc insulator strings/ metal polymer junction point in composite insulator strings so that they will reduce the voltage across the insulator units. It shall also improve corona and radio interference performance of the complete insulator string along with hardware fittings.

The corona control rings/grading ring shall be made of high strength heat treated aluminium alloy tube of minimum 2.5 mm wall thickness. If mild steel brackets are used then the brackets shall not be welded to the pipe but shall be fixed by means of bolts and nuts on a small aluminium plate attachment welded to the pipe. The welded center of the corona control ring/grading ring shall be grinded before buffing. Alternately, Aluminium tube/flats of suitable dimensions welded to the corona control rings/grading rings may be used for connection to yoke plate.

The Corona control rings/grading ring should have a brushed satin finish and not a bright glossy surface. No blemish should be seen or felt when rubbing a hand over the metal.

Bidder may quote for grading ring with armour grip suspension assembly. The grading ring shall be of open type design with a gap of 125 mm. The open ends shall be suitably terminated. The outside diameter of the tube shall be 75 mm. The ends of grading ring tube shall be sealed with welded aluminum cap duly buffed.

3.4.2.14. Sag Adjustment Plate (For 400 kV voltage level line)

The sag-adjustment plate to be provided with the double tension hardware fitting (for 400kV (Twin) line) shall be of three plate type. The sag adjustment plate shall be provided with a safety locking arrangement. The device shall be of such design that the adjustment is done with ease, speed and safety.

The maximum length of the sag adjustment plate from the connecting part of the rest of the hardware fittings shall be 520 mm. The details of the minimum and maximum adjustment possible and the steps of adjustment shall be clearly indicated in the drawing. An adjustment of 150 mm minimum at the interval of 6 mm shall be possible with the sag adjustment plate.

Design calculations for deciding the dimensions of sag adjustment plate shall be furnished by Contractor/Manufacturer. The hole provided for bolts should satisfy shear edge condition as per Clause No. 10.2.4.2 of IS:800-2007.

3.4.2.15. Turnbuckle

The turn buckle is to be provided with single tension hardware fitting. The threads shall be of sufficient strength to remain unaffected under the specified tensile load.

The maximum length of the turn buckle from the connecting part of the rest of the hardware fittings shall be 380 mm for 132KV and 220KV Line and 520mm for 400KV Line. The details of the minimum and maximum adjustment possible shall be clearly indicated in the drawing submitted with the bid. An adjustment of 135 mm minimum for 132KV and 220KV Line and 150mm minimum for 400KV Line shall be possible with turnbuckle.

3.4.2.16. Suspension Assembly

The suspension assembly shall include free center type suspension clamp along with standard preformed armour rods or armour grip suspension clamp; except for Pilot insulator string for which only suitable Envelope type suspension clamp shall be used.

The suspension clamp along with standard preformed armour rods set shall be designed to have maximum mobility in any direction and minimum moment of inertia so as to have minimum stress on the conductor in the case of oscillation of the same.

The suspension assembly shall be designed, manufactured and finished to give it a suitable shape, so as to avoid any possibility of hammering between suspension assembly and conductor due to vibration. The suspension assembly shall be smooth and without any cuts, grooves, abrasions, projections, ridges or excrescence which might damage the conductor.

The suspension assembly/clamp shall be so designed so that it minimises the static and dynamic stress developed in the conductor under various loading conditions as well as during wind induced conductor vibrations. It shall also withstand power arcs and have required level of Corona/AIV performance.

3.4.2.17. Free Center Type Suspension Clamp

For the Free Center Suspension Clamp seat shall be smoothly rounded and curved into a bell mouth at the ends. The lip edges shall have rounded bead. There shall be at least two U-bolts for tightening of clamp body and keeper pieces together.

3.4.2.18. Standard Preformed Armour Rod Set

The Preformed Armour Rod Set suitable for Conductor shall be used to minimise the stress developed in the sub-conductor due to different static and dynamic loads because of vibration due to wind, slipping of conductor from the suspension clamp as a result of unbalanced conductor tension in adjacent spans and broken wire condition. It shall also withstand power arcs, chafing and abrasion from suspension clamp and localised heating effect due to magnetic power losses from suspension clamps as well as resistance losses of the conductor.

The preformed armour rods set shall have right hand lay and the inside diameter of the helices shall be less than the outside diameter of the conductor in order to gently but permanently grip the conductor. The

surface of the armour rod when fitted on the conductor shall be smooth and free from projections, cuts and abrasions, etc.

The pitch length of the rods shall be determined by the Bidder but shall be less than that of the outer layer of conductor and the same shall be accurately controlled to maintain uniformity and consistently reproducible characteristic wholly independent of the skill of linemen.

The conductivity of each rod of the set shall not be less than 40% of the conductivity of the International Annealed Copper Standard (IACS).

3.4.2.19. Armour Grip Suspension Clamp

The armour grip suspension clamp shall comprise of retaining strap, support housing, elastomer inserts with aluminum reinforcements and AGS preformed rod set.

Elastomer insert shall be resistant to the effects of temperature up to 95oC, Ozone, ultraviolet radiations and other atmospheric contaminants likely to be encountered in service. The physical properties of the elastomer shall be of approved standard. It shall be electrically shielded by a cage of AGS performed rod set. The elastomer insert shall be so designed that the curvature of the AGS rod shall follow the contour of the neoprene insert.

The length of the AGS preformed rods shall be such that it shall ensure sufficient slipping strength as specified in the Standard Technical Particulars and shall not introduce unfavourable stress on the conductor under all operating conditions.

3.4.2.20. Envelope Type Suspension Clamp

The seat of the envelope type suspension clamp shall be smoothly rounded & suitably curved at the ends. The lip edges shall have rounded bead. There shall be at least two U-bolts for tightening of clamp body and keeper pieces together. Hexagonal bolts and nuts with split-pins shall be used for attachment of the clamp.

3.4.2.21. Dead End Assembly

The dead-end assembly shall be suitable for Conductor as detailed in the document.

The dead-end assembly shall be compression type with provision for comprising the jumper terminal at one end. The angle of the jumper terminal to be mounted should be 30^{o} with respect to the vertical line. The area of bearing surface on all the connections shall be sufficient to ensure positive electrical and mechanical contact and avoid local heating due to I2R losses. The resistance of the clamp when compressed on Conductor shall not be more than 75% of the resistance of equivalent length of Conductor.

The assembly shall not permit slipping of, damage to, or failure of the complete conductor or any part thereof at a load less than 95% of the ultimate tensile strength of the conductor.

3.4.2.22. Fasteners: Bolts, Nuts and 'Washers

All bolts and nuts shall conform to IS: 6639. All bolts and nuts shall be galvanised as per IS-1367 -(Part 13)/IS-2629. All bolts and nuts shall have hexagonal heads, the heads being forged out of solid truly concentric, and square with the shank, which must be perfectly straight.

Bolts up to M16 and having length up to 10 times the diameter of the bolt should be manufactured by cold forging and thread rolling process to obtain good and reliable mechanical properties arid effective dimensional control. The shear strength of bolt for 5.6 grade should be 310 MPa minimum as per IS-12427. Bolts should be provided with washer face in accordance with IS: 1363 Part-1 to ensure proper bearing.

Nuts should be double chamfered as per the requirement of IS: 1363 Part-III. It should be ensured by the manufacturer that nuts should not be over tapped beyond 0.4 mm oversize on effective diameter for size up to M16

Fully threaded bolts shall not be used. The length of the bolt shall be such that the threaded portion shall not extend into the place of contact of the component parts.

All bolts shall be threaded to take the full depth of the nuts and threaded enough to permit the firm gripping of the component parts but no further .it shall be ensured that the threaded portion of the bolt protrudes not less than 3 mm and not more than 8 mm when fully tightened. All nuts shall fit and tight to the point where shank of the bolt connects to the head.

For parts/ components requiring grip strength viz. arcing horn, corona rings & dead-end jumper assembly, fully threaded bolts can be used as an alternative. Bolts & nuts for these parts/ components shall be of minimum 4.6 grade conforming to IS 6639 or equivalent International standards.

Flat washers and spring washers shall be provided wherever necessary and shall be of positive lock type. Spring washers shall be electro-galvanised. The thickness of washers shall conform to IS: 2016.

The Bidder shall furnish bolt schedules giving thickness of components connected, the nut and the washer and the length of shank and the threaded portion of bolts and size of holes and any other special details of this nature.

To obviate bending stress in bolt, it shall not connect aggregate thickness more than three time its diameter.

Bolts at the joints shall be so staggered that nuts may be tightened with spanners without fouling.

Fasteners of grade higher than 8.8 are not to be used.

3.4.2.23. Materials

The materials of the various components shall be as specified hereunder. The Bidders hall indicate the material proposed to be used for each and every component of hardware fitting stating clearly the class, grade or alloy designation of the material, manufacturing process & heat treatment details and the reference standards.

Sl. No.	Name of item	Material treatment	Galvanising process	Reference standard	Remarks
1	Security Clips	Stainless Steel/ Phospher Bronze	-	AISI 302 or 304-L/ IS-1385	
2	Arcing Horn	Mild Steel Rod/ Tube Type	Hot dip galvanised	As per IS-226 or IS-2062	
3	Ball Fittings, Socket, all shackles links cleves	Class-IV Steel	Drop forged & normalized Hot dip galvanised	As per IS: 2004	
4	Yoke Plate	Mild Steel	Hot dip galvanized	As per IS-226 or IS-2062	
5	Sag Adjustment plate	Mild Steel	Hot dip galvanized	As per IS-226 or IS-2062	
6(a).	Corona Control ring/ Grading ring	High Strength Al. Alloy tube (6061/ 6063/1100 type or 65032/ 63400 Type)	Heat treated Hot dip galvanized	ASTM-B429 or as per IS	Mechanical strength of welded joint shall not be less than 20 KN

Sl. No.	Name of item	Material treatment	Galvanising process	Reference standard	Remarks
6(b).	Supporting Brackets & Mounting Bolts	High Strength Al Alloy 7061/ 6063/ 65032/63400 Type) or Mild Steel	Heat treated Hot dip galvanized	ASTM-B429 or as per IS:226 or IS:2062	
7(a).	Envelope type Clamp: Clamp Body, Keeper Piece	High Strength Al. Alloy 4600/ LM-6 or 6061/65032 or 6063/63400	Casted or forged & Heat treated	IS:617 or ASTM-B429	
7(b).	Envelope type Clamp: Cotter bolts/ Hangers, Shackles, Brackets	Mild Steel	Hot dip galvanised	As per IS-226 or IS-2062	
7(c)	Envelope type Clamp: U Bolts	Stainless Steel or High Strength Al alloy 6061/ 6063 or 65032/63400	Forged & Heat treated	AISI 302 or 304-L ASTM-B429	
8(a).	Dead End Assembly: Outer Sleeve	EC grade Al of purity not less than 99.50%			
8(b).	Steel Sleeve	Mild Steel	Hot Dip Galvanised	IS:226/ IS-2062	
9.	AGS clamp (a) Supporting house	High strength corrosion resistant Al. alloy LM6, 4600 or equivalent 6061	Cast/forged heat treated.	IS:617 or equivalent	
	(b) Al insert and retaining strap	High strength Al alloy type 6061 or equivalent	Forged and Heat treated	ASTM:B429	
	(c) Elastomer cushion	Moulded on Al reinforcement			
10.	P. A. rod	High strength Al alloy type 6061 or equivalent	Heat treatment during manufacturing	ASTM:B429	Min. tensile strength of 35 kg/mm2
11.	Turn Buckle	Class-II Steel	Forged hot dip galvanized	IS:2004	

3.4.2.24. **Workmanship**

All the equipment shall be of the latest design and conform to the best modern practices adopted in the Extra High Voltage field. The Bidder shall offer only such equipment as guaranteed by him to be satisfactory and suitable for rated voltage of transmission lines and will give continued good performance.

The design, manufacturing process and quality control of all the materials shall be such as to give the specified mechanical rating, highest mobility, elimination of sharp edges and comers to limit corona and radio-interference, best resistance to corrosion and a good finish.

All ferrous parts including fasteners shall be hot dip galvanized, after all machining has been completed. Nuts may, however, be tapped (threaded) after galvanizing and the threads oiled. Spring washers shall be electro galvanized. The bolt threads shall be undercut to take care of the increase in diameter due to galvanizing. Galvanizing shall he done in accordance with IS: 2629 / IS-1367 (Part 13)or equivalent International Standards and shall satisfy the tests mentioned in IS: 2633-1986or equivalent International Standards. Fasteners shall withstand four dips while spring washers shall withstand three dips of one-minute duration in the standard Preece test. Other galvanized materials shall have a minimum average coating of zinc equivalent to 610 gm / sq.m shall be guaranteed to withstand at least six successive dips each lasting one (1) minute under the standard price test for galvanizing.

Before ball fittings are galvanized, all die flashing on the shank and on the bearing surface of the ball shall be carefully removed without reducing the dimensions below the design requirements.

The zinc coating shall be perfectly adherent of uniform thickness, smooth, reasonably bright. Continuous and free from imperfections such as flux, ash, rust, stains, bulky white deposits and blisters. The zinc used for galvanizing shall be grade Zn 99.95 as per IS: 209or equivalent International Standards.

Pin balls shall be checked with the applicable “GO” gauges in at least two directions. one of which shall be across the line of die flashing, and the other 90o to this line. "NO GO" gauges shall not pass in any direction.

Socket ends, before galvanizing, shall be of uniform contour. The bearing surface of socket ends shall be uniform about the entire circumference without depressions, of high spots. The internal contours of socket ends shall be concentric with the axis of the fittings as per IS: 2486or equivalent International Standards.

The axis of the bearing surfaces of socket ends shall be coaxial with the axis of the fittings. There shall be no noticeable tilting of the bearing surfaces with the axis of the fittings.

In case of casting, the same shall be free from all internal defects like shrinkage, inclusion, blow holes, etc. Pressure die casting shall not be used for casting of components with thickness more than 5 mm

All current carrying parts shall be so designed and manufactured that contact resistance is reduced to minimum.

No equipment shall have sharp ends or edges, abrasions or projections and cause any damage to the inductor in any way during erection or during continuous operation which would product high electrical and mechanical stresses in normal working. The design of adjacent metal parts and mating surfaces shall be such as to prevent corrosion of the contact surface and to maintain good electrical contact under service conditions.

All the holes shall be cylindrical, clean cut and perpendicular to the plane of the material. The periphery of the holes shall be free from burrs.

All fasteners shall have suitable corona free locking arrangement to guard against Vibration loosening.

Welding of aluminium shall be by inert gas shielded tungsten arc or inert gas shielded metal arc process. Welds shall be clean, sound, smooth, uniform without overlaps, properly fused and completely sealed. There shall be no cracks, voids incomplete penetration, incomplete fusion, under-cutting or inclusions. Porosity shall be minimised so that mechanical properties of the aluminium alloys are not affected. All welds shall be properly finished as per good engineering practices.

3.4.2.25. **Completeness of works**

Bidder shall assess the complete requirement of line hardware, hardware accessories and assemblies in complete for the erection of the lines as per the recommended erection practices.

The hardware assemblies shall be supplied complete with components, sub-components, nuts, bolts, washer etc. fittings and accessories for conductor & earth wire like Mid Span Joints, Repair Sleeves, and Stockbridge Vibration Dampers.

3.4.2.26. **Standards**

The Hardware Fittings, conductor and earth wire accessories shall conform to the following Indian Standards or equivalent International Standards, which shall mean latest revisions, amendments/changes adopted and published unless specifically stated otherwise in the specification.

SL. No.	Standard	Particulars
1	IS: 209	Specification for Zinc.
2	IS: 398	Specification for Aluminum Conductors.
3	IS: 1327	Method of Determination of Weight of Zinc Coating on Tin Plate.
4	IS: 1573	Electroplated Coating of Zinc on Iron and Steel
5	IS: 2121 (Part I) (Part II)	Specification for Conductors and Earthwire, Accessories for Overhead Power Lines Armour Rods, Binding Wires and Tapes for Conductors Mid-span joints and Repair Sleeves for Conductors
6	IS : 2486(Part 1)	Specification for Insulator Fittings for Overhead Power Lines With a Nominal Voltage Greater than 1000 V General Requirements and Tests
7	IS:2629	Recommended Practice for Hot Dip Galvanizing of Iron and Steel
8	IS:2633	Method of Testing Uniformity of Coatingon Zinc Coated Articles
9	IS:4826	Galvanized Coating on Round Steel Wires
10	IS : 6639	Hexagonal Bolts for Steel Structures
11	IS: 6745	Methods for Determination of Weight of Zinc Coating on Zinc Coated Iron and Steel Articles.
12	IS : 8263	Method for Radio Interference Tests on High Voltage Insulators
13	IS : 9708	Specification for Stock Bridge vibration Dampers for Overhead Power lines

3.4.2.27. **TESTS**

The insulator discs and hardware fittings shall be subjected to the tests before despatch, in accordance with the relevant standards.

3.4.2.28. 220 kV Transmission Line with ACSR ZEBRA conductor

1. Suspension hardware fittings for ACSR ZEBRA Conductor

Sl.	Description	Unit	Particulars/ Value				
			Single "I" Suspension Fittings with		Double "I" Suspension Fittings with		Single suspension Pilot Fitting with
			AGS clamp	Free Centre clamp	AGS clamp	Free Centre clamp	Envelope clamp
1.	Maximum magnetic power loss of one suspension assembly at sub-conductor current of 500 amperes	Watt	2	2	2	2	4
2.	Slipping strength of suspension assembly	KN	16-24	16-24	16-24	16-24	16-24
3.	Particulars of standard/ AGS preformed armour rod set for suspension assembly						
	a) No. of rods per set	No.	12	12	12	12	NA
	b) Direction of lay		Right hand	Right hand	Right hand	Right hand	NA
	c) Overall length after fitting on conductor	mm	2080	2540	2080	2540	NA
	d) Diameter of each rod	mm	7.87	7.87	7.87	7.87	NA
	e) Tolerance in						
	i) Diameter of each rod	±mm	0.10	0.10	0.10	0.10	NA
	ii) Length of each rod	±mm	25	25	25	25	NA
	iii) Difference of length between the longest and shortest rod in a set	±mm	13	13	13	13	NA
	f) Type of Aluminium alloy used for manufacture of PA rod set		6061/ 65032	6061/ 65032	6061/ 65032	6061/ 65032	NA
	g) Minimum UTS of each rod	Kg/mm^2	35	35	35	35	NA
4.	**Particulars of Elastomer (For AGS Clamp only)**						
	a) Type of elastomer		Chloroprene/ Neoprene Rubber	NA	Chloroprene /Neoprene Rubber	NA	NA
	b) Shore hardness of elastomer		65 to 80	NA	65 to 80	NA	NA
	c) Temperature range for which elastomer is designed		Upto 95^o C	NA	Upto 95^o C	NA	NA
	d) Moulded on insert		Yes	NA	Yes	NA	NA
5.	Mechanical strength of suspension fitting(excluding suspension clamp)	KN	70		2 x 70		70
6.	Mechanical strength of suspension clamp	KN	70		70		70
7.	Galvanising						
a)	Weight of Zinc coating for steel parts	gm/m^2	600				
b)	Purity of Zinc used for galvanising	%	99.95 (IS 209: 1992) or 98.5 (IS 13229:1991)				
c)	Min. No. of dips in standard preece test the ferrous parts can withstand	No.	a) Fasteners: 4 dips of 1 minute b) Spring washers: 3 dips of 1 minute &				

	(wherever applicable)		c) all others: 6 dips of 1 minute

2. Tension hardware fittings for ACSR ZEBRA Conductor

Sl.	Description	Unit	Particulars/ Value	
			Single Tension	Double Tension
1.	Mechanical strength of Tension fitting(excluding dead end clamp)	KN	120	2x120
2.	Type of dead end assembly		Compression	
3.	Compression pressure	MT	100	
4.	Maximum electrical resistance of dead end assembly as a percentage of equivalent length of Conductor	%	75	
5.	Slip strength of dead end assembly	KN	123.80	
6.	Galvanising			
a)	Minimum weight of Zinc coating for steel parts	gm/m^2	600	
b)	Purity of Zinc used for galvanising	%	99.95 (IS 209) or 98.5 (IS 13229)	
c)	Min. No. of dips in standard preece test the ferrous parts can withstand (wherever applicable)	No.	a) Fasteners: 4 dips of 1 minute b) Spring washers: 3 dips of 1 minute & c) all others: 6 dips of 1 minute	

3.4.3. Accessories for Conductors

3.4.3.1. **Mid Span Compression Joint**

Standard Specification and tests shall be as per IS 2121(Part-II)

Mid Span Compression Joint shall be used for joining two lengths of conductor. The joint shall have a resistively less than 75% of the resistivity of equivalent length of conductor. The joint shall not permit slipping off, damage to or failure of the complete conductor or any part there of at a load less than 95% of the ultimate tensile strength of the conductor.

The joint shall be made of steel and aluminium sleeves for jointing the steel core and aluminium wires respectively. The steel sleeve should not crack or fail during compression. The steel sleeve shall be hot dip galvanised. The aluminium sleeve shall have aluminium of purity not less than 99.5%. The dimensions and dimensional tolerances of mid span compression joint shall be as per Standard Technical Particulars.

3.4.3.2. **T-Connector**

Standard Specification and tests shall be as per IS 2121(Part-II)

T-Connector of compression type shall be used for jumper connection at transposition tower . It shall be manufactured out of 99.5% pure aluminium and shall be strong enough to withstand normal working loads. The T-connector shall have a resistivity across jumper less than 75% resistivity of equivalent length of conductor. The T-connector shall not permit slipping off, damage to or failure of complete conductor. The welded portions shall be designed for 30 kN axial tensile load. Leg sleeve of T-connector should be kept at an angle of 15 deg. from vertical and horizontal plane of the conductor in order to minimise jumper pull at the welded portion. The dimensions and dimensional tolerances of T-connector shall be as per Standard Technical Particulars.

3.4.3.3. **Repair Sleeve**

Repair Sleeve of compression type shall be used to repair conductor with not more than two strands broken in the outer layer. The sleeve shall be manufactured from 99.5% pure aluminium and shall have a smooth surface. The repair sleeve shall comprise of two pieces with a provision of seat for sliding of the keeper piece. The edges of the seat as well as the keeper piece shall be so rounded that the conductor strands are not damaged during installation. The dimensions and dimensional tolerances of repair sleeve shall be as per Standard Technical Particulars.

3.4.3.4. **Material and Workmanship**

All the equipment shall be of the latest proven design and conform to the best modern practice adopted in the extra high voltage field. The Bidder shall offer only such equipment as guaranteed by him to be satisfactory and suitable for transmission line application of the rated voltage with bundle conductors and will give continued good performance.

The design, manufacturing process and quality control of all the materials shall be such as to achieve requisite factor of safety for maximum working load, highest mobility, elimination of sharp edges and corners, best resistance to corrosion and a good finish.

All ferrous parts shall be hot dip galvanised, after all machining has been completed. Nuts may, however, be tapped (threaded) after galvanising and the threads oiled. Spring washers shall be electro galvanised as per grade 4 of IS-1573-1970. The bolt threads shall be undercut to take care of increase in diameter due to galvanising. Galvanising shall be done in accordance with IS:2629/IS-1367 (Part-13) and satisfy the tests mentioned in IS-2633. Fasteners shall withstand four dips while spring washers shall withstand three dips. Other galvanised materials shall have a minimum overall coating of Zinc equivalent to 600 gm/sq.m and shall be guaranteed to withstand at least six dips each lasting one minute under the standard Preece test for galvanising unless otherwise specified.

The zinc coating shall be perfectly adherent, of uniform thickness, smooth, reasonably bright, continuous and free from imperfections such as flux, ash, rust stains, bulky white deposits and blisters. The zinc used for galvanising shall be of grade Zn.99.95 as per IS:209.

In case of castings, the same shall be free from all internal defects like shrinkage, inclusion, blow holes. cracks etc.

All current carrying parts shall be so designed and manufactured that contact resistance is reduced to minimum and localised heating phenomenon is averted.

No equipment shall have sharp ends or edges, abrasions or projections and shall not cause any damage to the conductor in any way during erection or during continuous operation which would produce high electrical and mechanical stresses in normal working. The design of adjacent metal parts and mating surfaces shall be such as to prevent corrosion of the contact surface and to maintain good electrical contact under all service conditions.

Particular care shall be taken during manufacture and subsequent handling to ensure smooth surface free from abrasion or cuts.

The fasteners shall conform to the requirements of IS:6639. All fasteners and clamps shall have corona free locking arrangement to guard against vibration loosening.

3.4.3.5. **Accessories for ACSR ZEBRA conductor for 220 kV transmission line**

1. Mid span compression Joint for ACSR ZEBRA Conductor

Sl.	Description	Unit	Particulars/ Value	
			Aluminium Sleeve	Steel Sleeve
1.	Material of Joint		Aluminium of minimum purity 99.5%	Mild Steel(Fe-410, IS:2062)
2.	Range of Hardness of the steel sleeve (Brinnel hardness)	BHN	From 100 to 200	
3.	Dimension of sleeve Before compression		Aluminum sleeve	Steel sleeve
i)	Inside diameter	mm	31.00 ± 0.5	10.00 ± 0.2
ii)	Outside diameter	mm	48.00 ± 1.0	20.00 ± 0.5
iii)	Length	mm	710 ± 5	241 ± 5
4.	Dimensions of Sleeve after compression		Aluminum sleeve	Steel sleeve
i)	Outside dimension(Corner to corner)	mm	47.00 ± 0.5	19.00 ± 0.5
ii)	Outside dimension (face to face)	mm	41.00 ± 0.5	16.00 ± 0.5
5.	Slip strength	KN	123.8	
6.	Maximum resistance of the compressed unit expressed, as percentage of the resistance of equivalent length of bare conductor.	%	75	
7.	Minimum corona Extinction voltage kV (rms) under dry condition	kV	154	
8.	Maximum Radio Interference Voltage at 1 MHz for phase to earth voltage of 154 kV (rms) under dry condition	Micro Volts	1000	
9.	Galvanising			
a)	Minimum weight of Zinc coating for steel parts	gm/m^2	600	
b)	Purity of Zinc used for galvanising	%	99.95 (IS 209) or 98.5 (IS 13229)	
c)	Min. No. of dips in standard preece test the ferrous parts can withstand (wherever applicable)	No.	a) Fasteners: 4 dips of 1 minute b) Spring washers: 3 dips of 1 minute & c) all others: 6 dips of 1 minute	

2. Repair sleeve for ACSR ZEBRA Conductor

Sl.	Description	Unit	Particulars/ Value
1.	**Material**		Aluminium of minimum purity 99.5%
2.	**Dimension of Aluminum sleeve Before compression**		
i)	Inside diameter	mm	31.00 ± 0.5
ii)	Outside diameter	mm	48.00 ± 1.0
iii)	Length	mm	275.00 ± 5.0
3.	**Dimensions of Aluminum Sleeve after compression**		
i)	Outside dimension(Corner to corner)	mm	47.00 ± 0.5
ii)	Outside dimension (face to face)	mm	41.00 ± 0.5
4.	Minimum corona Extinction voltage kV (rms) under dry condition	kV	154
5.	Maximum Radio Interference Voltage at 1 MHz for phase to earth voltage of 154 kV (rms) under dry condition	Micro Volts	1000

3.4.4. Accessories for Ground Wire

3.4.4.1. Mid Span Compression Joint

Mid Span Compression Joint shall be used for joining two lengths of earth wire. The joint shall be made of mild steel with aluminium encasing. The steel sleeve should not crack or fail during compression. The Brinnel Hardness of steel should not exceed the value as stipulated in the Standard Technical Particulars. The steel sleeve shall be hot dip galvanised. The aluminium sleeve shall have aluminium of purity not less than that stipulated in the Standard Technical Particulars. Filler aluminium sleeve shall also be provided at the both ends. The joints shall not permit slipping off, damage to or failure of the complete earth wire or any part thereof at a load not less than 95% of the ultimate tensile strength of the earth wire. The joint shall have resistivity less than 75% of resistivity of equivalent length of earth wire. The dimensions and the dimensional tolerances of the joint shall be as stipulated in the Standard Technical Particulars.

3.4.4.2. Suspension Clamp

Standard anchor shackle/twisted shackle for earth wire suspension clamp shall be supplied for attaching to the hanger plate of tower.

At all suspension towers, suitable suspension clamps shall be used to support the required earth wire. The clamps shall be of either free center type or trunion type and shall provide adequate area of support to the earth wire. The groove of the clamp shall be smooth, finished in an uniform circular or oval shape and shall slope downwards in a smooth curve to avoid edge support and hence to reduce the intensity of bending moment on earth wire.

There shall be no sharp point in the clamps coming in contact with earth wire. There shall not be any displacement in the configuration of the earth wire strands nor shall the strands be unduly stressed in final assembly during working conditions.

The clamping piece and the clamp body shall be clamped by at least two U-bolts of size not less than 10 mm diameter having one nut and one 3 mm thick lock nut with washer on each of its limbs. Suspension clamps shall be provided with inverted type U-bolts. One limb of the U-bolt shall be long enough to accommodate the lug of the flexible aluminium bond.

The Contractor shall supply all the components of the suspension assembly including shackles, bolts, nuts, washers, split pin etc. The total drop of the suspension assembly from the center point of the attachment to the center point of the earth wire shall not exceed 150 mm. The design of the assembly shall be such that the direction of run of the earth wire shall be same as that of the conductor.

The complete assembly shall be guaranteed for slip and breaking strength of values indicated in the Standard Technical Particulars

3.4.4.3. Tension Clamp

At all tension towers suitable compression type tension clamps shall be used to hold the required galvanised steel earth wire. Anchor shackle shall be supplied which shall be suitable for attaching the tension clamp to strain plates.

The clamps shall have adequate area of bearing surface to ensure positive electrical and mechanical contact and shall not permit any slip to the earth wire under working tension and vibration conditions. The angle of jumper terminal to be mounted should be 30 deg. with respect to the vertical line.

The clamps shall be made of mild steel with aluminium encasing. The steel should not crack or fail during compression. The Brinnel hardness of steel sleeve shall not exceed 200. The steel sleeve shall be hot dip

galvanised. The aluminium encasing shall have aluminium of purity not less than 99.5%. Filler aluminium sleeve shall also be provided at the end.

The complete assembly shall be so designed as to avoid undue bending in any part of the clamp and shall not produce any hindrance to the movements of the clamps in horizontal or vertical directions.

The slip strength of the assembly shall not be less than 95% of the ultimate strength of the earth wire.

The clamps shall be complete with all the components including anchor shackle, bolts, nuts, washers, split pin, jumper arrangement etc.

3.4.4.4. **Accessories for 7/3.15 mm GS Earthwire for 220 kV and 132 kV transmission line**

1. Mid span compression Joint for 7/3.15 mm GS Earthwire

Sl.	Description	Unit	Particulars/ Value		
			Aluminium / Filler Sleeve	Steel Sleeve	
1.	**Material of Joint**		Aluminium of minimum purity 99.5%	Mild Steel(Fe-410, IS:2062)	
2.	Range of Hardness of the steel sleeve (Brinnel hardness)	BHN	From 100 to 200		
3.	**Dimension of sleeve Before compression**				
			Aluminium Sleeve	Steel Sleeve	Alu filler sleeve
i)	Inside diameter	mm	22.00 ± 0.5	10.00 ± 0.2	11.50 ± 0.2
ii)	Outside diameter	mm	30.00 ± 0.5	21.00 ± 0.5	21.00 ± 0.5
iii)	Length	mm	315 ± 5	230 ± 5	25 ± 2
4.	**Dimensions of Sleeve after compression**				
			Aluminium Sleeve	Steel Sleeve	
i)	Outside dimension(Corner to Corner)	mm	29.40 ± 0.5	20.20 ± 0.5	
ii)	Outside dimension (face to face)	mm	25.00 ± 0.5	17.50 ± 0.5	
5.	Slip strength	KN	53.20		
6.	Maximum resistance of the compressed unit expressed, as percentage of the resistance of equivalent length of bare Earthwire	%	75		
7.	Galvanising				
a)	Minimum weight of Zinc coating for steel parts	gm/m^2	600		
b)	Purity of Zinc used for galvanising	%	99.95 (IS 209) or 98.5 (IS 13229)		
c)	Min. No. of dips in standard preece test the ferrous parts can withstand (wherever applicable)	No.	a) Fasteners: 4 dips of 1 minute b) Spring washers: 3 dips of 1 minute & c) all others: 6 dips of 1 minute		

2. Flexible Copper Bond for 7/3.15 mm GS Earthwire

Sl.	Description	Unit	Particulars/ Value

1.	Stranding		19 (12+6+1) / dia 2.54
2.	Cross sectional area	Sq.mm	95
3.	Minimum copper equivalent area	Sq.mm	750 + 5
4.	Length of copper cable	mm	Aluminium alloy
5.	Material of lugs		19 (12+6+1) / dia 2.54
6.	Bolt Size		
	i) Diameter	mm	16
	ii) Length	mm	40

3. Vibration Damper for 7/3.15 mm GS Earthwire

Sl.	Description	Unit	Particulars/ Value
1.	Type of Damper		4R-Stockbridge type
2.	Materials of components		
	a) Damper masses		Cast iron/ mild steel hot dip galvanised / Zinc alloy
	b) Clamp		Aluminum alloy 4600
	c) Messenger cable		High tensile strength galvanized steel
3.	Number of strands in stranded messenger cable	Nos.	19
4.	Minimum ultimate tensile strength of stranded messenger cable	Kg/mm^2	135
5.	Slip strength of stranded messenger cable (mass pull off)	kN	2.5
6.	Slipping strength of damper clamp		
	(a) Before fatigue test	kN	2.5
	(b) After fatigue test	kN	2
7.	Resonance frequencies range	Hz	10 to 60
8.	Percentage variation in reactance after fatigue test in comparison with that . before fatigue test	%	+/-40 (Maximum)
9.	Percentage variation in power dissipation after fatigue test in comparison with that before fatigue test	%	+/-40 (Maximum)
10.	Galvanising		
a)	Minimum weight of Zinc coating for steel parts	gm/m^2	600
b)	Purity of Zinc used for galvanising	%	99.95 (IS 209) or 98.5 (IS 13229)
c)	Min. No. of dips in standard preece test the ferrous parts can withstand (wherever applicable)	No.	a) Fasteners: 4 dips of 1 minute b) Spring washers: 3 dips of 1 minute & c) all others: 6 dips of 1 minute

4. Suspension Clamp for 7/3.15 mm GS Earthwire

Sl.	Description	Unit	Particulars/ Value
1.	**Material of components**		
	(a) Shackle		Forged Steel
	(b) Clamp Body & Keeper		Malleable cast iron / SGI
	(c) U- Bolt		Mild Steel (Fe 410, IS 2062)
2.	Total Drop (Maximum)	mm	150
3.	Breaking Strength (Minimum)	kN	25
4.	Slipping Strength	kN	9 to 14

5.	Galvanising		
a)	Minimum weight of Zinc coating for steel parts	gm/m^2	600
b)	Purity of Zinc used for galvanising	%	99.95 (IS 209) or 98.5 (IS 13229)
c)	Min. No. of dips in standard preece test the ferrous parts can withstand (wherever applicable)	No.	a) Fasteners: 4 dips of 1 minute b) Spring washers: 3 dips of 1 minute & c) all others: 6 dips of 1 minute

5. Tension Clamp for 7/3.15 mm GS Earthwire

Sl.	Description	Unit	Particulars/ Value		
1.	**Material of components**				
	(i) Anchor Shackle		Forged Steel		
	(ii) Compression Clamp				
	a) Steel Sleeve		Mild Steel (Fe 410, IS 2062)		
	b) Aluminium sleeve		Aluminium of purity 99.5%		
	c) Aluminium Filler sleeve		Aluminium of purity 99.5%		
2.	Range of Hardness of the steel sleeve (Brinnel hardness)	BHN	100-200		
3.	**Dimension of sleeve Before compression**				
			Aluminium Sleeve	Steel Sleeve	Alu filler sleeve
i)	Inside diameter	mm	22.00 ± 0.5	10.00 ± 0.2	11.50 ± 0.2
ii)	Outside diameter	mm	30.00 ± 0.5	21.00 ± 0.5	21.00 ± 0.5
iii)	Length	mm	220 ± 5	180 ± 5	25 .0±2
4.	**Dimensions of Sleeve after compression**				
			Aluminium Sleeve	Steel Sleeve	
i)	Outside dimension(Corner to Corner)	mm	29.40 ± 0.5	20.20 ± 0.5	
ii)	Outside dimension (face to face)	mm	25.00 ± 0.5	17.50 ± 0.5	
5.	Slip strength	KN	53.20		
6.	Minimum Breaking strength of assembly (excluding clamp)	KN	70		
7.	Compression Pressure	Ton	100		
8.	Galvanising				
a)	Minimum weight of Zinc coating for steel parts	gm/m^2	600		
b)	Purity of Zinc used for galvanising	%	99.95 (IS 209) or 98.5 (IS 13229)		
c)	Min. No. of dips in standard preece test the ferrous parts can withstand (wherever applicable)	No.	a) Fasteners: 4 dips of 1 minute b) Spring washers: 3 dips of 1 minute & c) all others: 6 dips of 1 minute		

3.4.5. Chapter 5: T Clamp and Equipment Clamps

3.4.5.1. **T Clamps:**

1. Standard Specification and tests shall be as per IS:5561.
2. For connecting ACSR conductor alluminium alloy casting conforming to designation A 6 of IS 617
3. Bolts, nuts and washers shall be made of mild steel and hot dip galvanized as per IS 2629. Small fittings like spring washers, nuts etc. may be electrogalvanised.
4. The quality of HDG ferrous components shall be determined by the test given in IS:2633 and shall satisfy the requirement of that standard.

5. The rated short time current shall be one of the standard values laid down in Indian Standards for the associated circuit breakers, Switches etc.
6. Current carrying capacity same as conductor full current rating. For two different conductors, conductor with smaller rating shall be considered.
7. No part of a clamp shall be less than 12 mm thick for fittings suitable upto size of ACSR Panther conductor, No part of a clamp shall be less than 15 mm thick for fittings suitable for ACSR Zebra conductor and ACSR Moose conductor.
8. All sharp edges and corners shall be blurred and rounded off.
9. For bimetallic connectors, copper alloy liner of minimum thickness of 2 mm shall be cast integral with aluminium body.
10. From outermost hole edge to nearest edge of any clamps and connectors the distance shall not be less than 10 mm.

3.4.5.2. **Equipment Clamps (CVT, CB, ISOLATOR, CT and PT):**

1. Standard Specification and tests shall be as per IS:5561.
2. For connecting ACSR conductor alluminium alloy casting conforming to designation A 6 of IS 617.
3. Bolts, nuts and washers shall be made of mild steel and hot dip galvanized as per IS 2629. Small fittings like spring washers, nuts etc. may be electrogalvanised.
4. The quality of HDG ferrous components shall be determined by the test given in IS:2633 and shall satisfy the requirement of that standard.
5. The rated short time current shall be one of the standard values laid down in Indian Standards for the associated circuit breakers, Switches etc.
6. Current carrying capacity same as conductor full current rating. For two different conductors, conductor with smaller rating shall be considered.
7. No part of a clamp shall be less than 12 mm thick for fittings suitable upto size of ACSR Panther conductor, No part of a clamp shall be less than 15 mm thick for fittings suitable for ACSR Zebra conductor and ACSR Moose conductor.
8. All sharp edges and corners shall be blurred and rounded off.
9. For bimetallic connectors, copper alloy liner of minimum thickness of 2 mm shall be cast integral with aluminium body.
10. From outermost hole edge to nearest edge of any clamps and connectors the distance shall not be less than 10 mm.

Section - 4

General Conditions of Supply and Erection of AEGCL

This Section 'General Conditions of Supply and Erection of AEGCL' supplementary to Section -5 'Special Conditions of Contract' of this document and can be downloaded from www.aegcl.co.in. Whenever there is a conflict, the provisions in SCC or the other Sections of this bid document shall prevail over those in the 'General Conditions of Supply and Erection of AEGCL'.

Section - 5

Special Conditions of Contract

5.1.0 DEFINITION OF TERMS

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

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

"Contract Price" means the price payable to the Contractor as specified in the Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.

"Day" means calendar day

"Year" means 365 days.

"Month" means calendar month.

"Party" means the "Purchaser" or the "Contractor", as the context requires.

"*Purchaser*" means the Assam Electricity Grid Corporation Limited (in short AEGCL) and its assignees.

The "*Contractor*" shall mean the tenderer / bidder whose tender/ bid has been accepted by the "Purchaser" and shall include the bidder's legal representatives, successors and assignees.

"Goods" means all of the commodities, raw material, machinery and equipment, and/or other materials that the Contractor is required to supply to the Purchaser under the Contract.

"Delivery" means the transfer of the Goods from the Contractor to the Purchaser in accordance with the terms and conditions set forth in the Contract.

"Completion" means the fulfilment of the Related Services by the Contractor in accordance with the terms and conditions set forth in the Contract.

"Related Services" means the services incidental to the supply of the goods, such as insurance, installation, training and initial maintenance and other similar obligations of the Contractor under the Contract.

The "Specification" shall mean the "Purchaser's Requirements".

"Contractor" means the natural person, a company/firm, or a combination of these, whose bid to perform the Contract has been accepted by the Purchaser and is named as such in the Agreement, and includes the legal successors or permitted assigns of the Contractor.

5.2.0 CONTRACT DOCUMENTS

5.2.1. Subject to Article 1.2 (Order of Precedence) of the Contract Agreement, all documents forming part of the Contract (and all parts thereof) are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole.

5.3.0 LEGAL JURISDITCTION

5.3.1. For any litigation arising out of the contract which cannot be resolve through mutual agreement or through Arbitration the honorable Guwahati High Court will have sole jurisdiction of all settlement.

5.4.0 LANGUAGE

5.4.1. The ruling language of the Contract shall be English.

5.5.0 SCOPE OF WORK

5.5.1. The Goods and Related Services to be supplied shall be as specified in section 3- Purchaser's requirement and quantity as stated in Schedule No. 1 of Section -2, Bidding Forms.

5.5.2. **Unless otherwise stipulated in expressly limited in the *Purchaser's Requirements*, the Scope of Supply shall include all such items not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Delivery and Completion of the Goods and Related Services as if such items were expressly mentioned in the Contract.**

5.6.0 DELIVERY SCHEDULE

5.6.1. Contract completion sall be **4(Four) months** from Contrat commencement.

5.6.2. The Delivery of the Goods and Completion of the Related Services shall be in accordance with the Delivery and Completion Schedule specified in the Article 3 of the Contract Agreement (Contract Forms) or within such extended time to which the Contractor shall be entitled under *SCC* ***Clause 5.16.0*** hereof.

5.7.0 CONTRACT PRICE

5.7.1. The Contract Price shall be as specified in **Article 2 (Contract Price)** of the Contract Agreement.

5.7.2. Unless an escalation clause is provided for in the **Article 2 (Contract Price)**, the Contract Price shall be a firm shall not subject to any alteration, except in the event of a Change in the scope or changes in applicable tax rates or as otherwise provided in the Contract.

5.8.0 TERMS OF PAYMENT

5.8.1. The contract price shall be paid as specified in subsequent sub-clauses, if not provided in Contract Forms, Section-6.

5.8.2. Payment against supply of equipment and F&I shall be made as follows: -

1. Within 60 (sixty) days from the date of submission of the invoice against successful delivery, 80% (eighty percent) payment of the invoice value(without GST) would be made along with 100% GST on receipt and acceptance of materials in full and good condition.
2. In total 5 (five) Nos. of invoice/ bill would be entertained.
3. For payment upto 80% of the total contract value, maximum 4 (four) Nos. of progressive invoices/ bills would be entertained.
4. Final invoice/ bill of 20% would be entertained on completion work to the satisfaction of purchaser.

5.8.3. Documents required along with invoice: Following documents need to be submitted along with invoice –

(i) Application for payment
(ii) Contractors invoice showing LOA reference, Goods description, quantity dispatched, unit reclamation price, total amount (6 Copies)
(iii) Packing List
(iv) Railway receipt/ LR
(v) Manufacturer's guarantee certificate of Quality
(vi) Material inspection Clearance Certificate for dispatch issued by Purchaser
(vii) Insurance certificate.
(viii) Physical verification certificate of material received at site by Purchaser/Purchaser's site representative.

5.8.4. ADVANCE PAYMENT

No advance payment is applicable for this contract.

5.9.0 PERFORMANCE SECURITY DEPOSIT

5.9.1. The successful bidder shall have to deposit to the extent of **10% (ten percent) of the Contract price** as performance security (Bank Guarantee), within fifteen (15) days of receipt of notification of award, duly pledged in favor of the Managing Director, AEGCL and such security deposits shall be valid up to 60(sixty) days beyond the warranty period as per clause 5.11.3.

5.9.2. If the Contractor fails or neglects to observe, perform any of his obligations under the contract, it will be lawful for the "Purchaser" to forfeit either in full or in part at his absolute discretion, the security deposit furnished by the Contractor.

5.9.3. No interest shall be payable on such deposits.

5.10.0 RETENTION MONEY

5.10.1. Deduction shall be as per payment terms clause no. 5.8.2.

5.10.2. No interest shall be payable on such deductions/retentions.

5.11.0 WARRANTY

5.11.1. The Contractor/Manufacturer warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.

5.11.2. The Contractor/Manufacturer further warrants that the Goods shall be free from defects arising from any act or omission of the Contractor or arising from design, materials, and workmanship, under normal use in the conditions prevailing in the country of final destination.

5.11.3. The warranty shall remain valid for **18 (*Eighteen) months*** from the date of successful commissioning after the Goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the Purchaser's Requirement. Bidder may at its discretion offer extra warranty which shall be evaluated in the mark based evaluation system

5.11.4. If during the Period Warranty any defect should be found, the Purchaser shall give Notice to the Contractor/Manufacture stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Purchaser shall afford all reasonable opportunity for the Contractor/Manufacturer to inspect such defects.

5.11.5. If having been notified, the Contractor/Manufacturer fails to remedy the defect within a period of 15 (fifteen) days, the Purchaser may, following notice to the Contractor/Manufacturer, proceed to do such work, and the reasonable costs incurred by the Purchaser in connection therewith shall be paid to the Purchaser by the Contractor or may be deducted by the Purchaser from any monies due the Contractor or claimed under the Performance Security.

5.12.0 QUANTITY VARIATION

5.12.1. "Purchaser" shall have the right to increase/decrease the ordered quantity by 25% within 50 days of the period of completion and the same shall be carried out at the same rates /prices and terms and conditions stipulated in the contract except in regard to completion schedule, which shall be mutually agreed upon in case of enhancement of the ordered quantity.

5.13.0 INSPECTION AND TESTING

5.13.1. The Contractor shall at its own expense and at no cost to the Purchaser carry out all such tests and/or inspections of the Goods and Related Services as are specified in Sections 3, Purchaser's Requirements.

5.13.2. The inspections and tests shall generally be conducted on the premises of the Contractor/Manufacture. Subject to Sub-Clause 5.13.3, The Contractor shall furnish, all reasonable facilities and assistance, including access to drawings/process chart and production data to the inspectors at no charge to the Purchaser.

5.13.3. The Purchaser or its designated representative shall be entitled to attend the tests and/or inspections referred to in SCC Sub-Clause 5.13.2, provided that the Purchaser bear all of its own costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.

5.13.4. Whenever the Contractor is ready to carry out any such test and/or inspection, the Contractor shall give a reasonable advance notice (not less than 21 days) of such test and/or inspection and of the place and time thereof to the Purchaser. The Contractor shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.

5.13.5. The Contractor/manufacture shall provide the Purchaserwith a certified report of the results of any such test and/or inspection.

5.13.6. The Purchaser may reject any Goods 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 parts thereof or make alterations necessary to meet the specifications at no cost to the Purchaser, and shall repeat the test and/or inspection, at no cost to the Purchaser, upon giving a notice pursuant to SCC Sub-Clause 5.13.4

5.13.7. If it is agreed between the Purchaser and the Contractor that the Purchasershall not attend thetest and/or inspection, then the Contractor may proceed with the test and/or inspection, and should provide the Purchaser with a certified report of the results thereof.

5.13.8. The Contractor agrees that neither the execution of a test and/or inspection of the Goods or any part thereof, nor the attendance by the Purchaser or its representative, nor the issue of any report pursuant to SCC Sub-Clause 5.13.5 & 5.13.7, shall release the Contractor from any warranties or other obligations under the Contract.

5.14.0 INSURANCE

5.14.1. The “Contractor” shall, have, unless, otherwise specified by the Purchaser, insure the materials through their underwrites at their cost and shall keep it insured against any loss/ damaged/ pilferage in transit, destruction or damage by fire/ flood, without exposure to vagaries of weather or through riot, civil commotion, war or rebellion, for the full value of the materials until the materials are received at the purchaser’s destination store.

5.14.2. The “Contractor” shall be responsible for safe arrival at destination, unloading and receipt of the materials by the consignee. The Purchaser will discharge consignee’s responsibilities only and shall not be responsible for any damage/ loss/ pilferage/ non-delivery by the carriers.

5.14.3. In case of any loss/ damage/ pilferage/ non-delivery/ short delivery by carriers etc.; the Contractor shall replace free of cost missing / damaged / lost materials within 30(thirty) days from the receipt of report thereof from the consignee(s) without waiting for settlement of their claims with their carriers / under-writers. Normally, such reports from the consignee(s) to the Contractor shall be initiated within a period of 30(thirty) days from the date of receipt of each consignment by him /them.

5.14.4. If it is considered necessary that the damage equipment either in part or in full to be sent back to the manufacturer’s works for repair, the manufacturers/ Contractors will furnish the Bank Guarantee for the full value of equipment needing repairs and such Bank Guarantee shall remain valid till such time, the equipment are repaired and returned to the consignee in good condition. The to and fro freight, handling and insurance charges in such cases will be borne by the Contractor.

5.14.5. Unless, otherwise mutually agreed upon, in case of failure by the Contractor to replenish /make good of the loss /damage /short supplied quantities, within the stipulated period, the Purchaser reserves the right to forfeit the security deposit and/ or adjust any outstanding payment to the “Contractor” with the Purchaser or take any other appropriate action.

5.15.0 FORCE MAJEURE

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

(a) war, hostilities or warlike operations whether a state of war be declared or not, invasion, act of foreign enemy and civil war

(b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts

(c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority

(d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine and plague

(e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster

(f) shortage of labor, materials or utilities where caused by circumstances that are themselves Force Majeure.

5.15.2. If either party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.

5.15.3. The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with ***SCC Clause 5.16.0***.

5.16.0 EXTENSION OF TIME FOR COMPLETION

5.16.1. The Time(s) for Completion specified in the Article 3 of the Contract Agreement (Contract Forms) shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:

(a) any Change in the scope of works by the Purchaser; which justifies extension of completion time as provided in ***SCC Clause 5.12.0***; and

(b) any occurrence of Force Majeure as provided in ***SCC Clause 5.15.0***.

5.16.2. Except where otherwise specifically provided in the Contract, the Contractor shall submit to the Purchaser's Representative a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Purchaser and the Contractor shall agree upon the period of such extension. In the event that the Contractor does not accept the Purchaser's estimate of a fair and reasonable time extension, the Contractor shall be entitled to refer the matter to a Dispute Board, pursuant to ***SCC Sub-Clause 5.19.0***.

5.17.0 LIQUIDATED DAMAGE

5.17.1. The Contractor guarantees that it shall attain Completion of the Works within the Time for Completion specified in the Contract Agreementpursuant to ***SCC Sub-Clause 5.6.2***, or within such extended time to which the Contractor shall be entitled under ***SCC Clause 5.16.0*** hereof.

5.17.2. If the Contractor fails to attain Completion of the Works within the Time for Completion or any extension thereof under ***SCC Clause 5.16.0***, the Contractor shall pay to the Purchaser liquidated damages at the rate of ***1% (one percent)*** of the total Contract Price per week or part thereof delay. The aggregate amount of such liquidated damages shall in no event exceed ***10% (ten percent)*** of the total contract price.

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

5.17.3. Once the aggregated "Liquidated damage" reaches10% of the total contract price, the Purchaser may consider following actions:

(a) Procure the undelivered material/ equipment and/or complete the balance works from elsewhere giving notice to the Contractor and to recover any extra expenditure incurred thereby for having to procure these materials and works at higher price, at the risk and responsibility of the Contractor; or

(b) Cancel the contract wholly or in part and to complete the works at the full risk and cost of the Contractor and forfeit the security deposit.

(c) Declare it as a "Contractual Failure" and act in accordance with ***SCC Clause 5.18.0***.

5.18.0 CONTRACTUAL FAILURE

5.18.1. In the event of contractual failure of any respect on the part of the Contractor, the Purchaser shall be entitled to operate security deposit or any deposit or any payment due to Contractor irrespective of whether his default relates to the particular orders or not towards the Purchaser's claim for damages arising out of the failure. In addition, the Purchaser may black-list or bans the "Contractor" or pending enquiry, suspend him or take any other steps considered suitable.

5.19.0 ARBITRATION

5.19.1. If at any time, any question, disputes or differences whatsoever shall rise between the Purchaser and the Contractor, upon or in relation to or in connection with the contract, either party may forthwith give notice to the other in writing of the existence of such question of dispute or difference and the same shall be referred to the adjudication of three Arbitrators, one to be nominated by the Purchaser the other by the Contractor and the third by the President of the Institution of Engineers, India/ Retired or Sitting Judge not below the status of a retired Judge of High Court of India. If either of the parties fail to appoint its arbitrators within 60(sixty) days after receipt of notice of the appointment of arbitrators then the President of the Institution of Engineers /retired or sitting Judge of India, as the case may be, shall have the power at request of either of the parties, to appoint an Arbitrator. A certified copy of the "President" making such an appointment shall be furnished to both parties

5.19.2. The arbitration shall be conductedas per provisions of the Indian Arbitration Act, shall be held at Guwahati or any other place as may be decided by the Purchaser. The decision of the majority of Arbitrators shall be final & binding upon the parties and the expenses of the arbitration shall be paid as may be determined by the Arbitrator. However, any dispute arising out of this contract will first be discussed and settled bilaterally between Purchaser and the Contractor.

Section 6 - Contract Forms

This Section contains the format for Notification of Award, the Contract Agreement and Appendices to the Contract Agreement which, once completed, will form the Contract along with the Section 4 and Section 5.The Bidder should note that this Section shall be completed fully at the time of Contract signing.

[AEGCL's letter head]

Notification of Award

[date]

To: [Name and address of the Contractor]

This is to notify you that your Bid dated *[date]* for execution of the *[name of the work]* against *[Bid identification number]* for the Contract Price in the aggregate of Rupees *[amounts in numbers and words]* (as per Price Schedule-1), as corrected and modified in accordance with the Instructions to Bidders is hereby accepted, and it is decide to award on you the '**Supply of clamps, connectors and hardware fittings for Lower Assam Region in AEGCL**' covering inter-alia supply of all services specified in bidding document.

You are requested to furnish the Performance Security within fifteen (15) days in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms included in Section 6 (Contract Forms) of the Bidding Document.

[Authorized Signature]
[Name and Title of Signatory]
Assam Electricity Grid Corporation Limited

Attachment: 1) Price schedule (with arithmetic correction if any)
2) Draft Contract agreement

STAMP

1. Contract Agreement

(Supply and related services Contract)

THIS AGREEMENT made the _____ day of _____, _____,

BETWEEN

Assam Electricity Grid Corporation Limited (herein after referred to as AEGCL), a corporation incorporated under the laws of Company Act, 1956 and having its registered office at First Floor, Bijuli Bhawan, Paltanbazar, Guwahati-781001, Assam and [***name of Contractor***], a firm/company incorporated under the laws of Company Act, 1956 and having its principal place of business at [***address of Contractor***] (hereinafter called "the Contractor"). [***~~in case of JV insert name and address of the Lead Partner as well as other Partners~~]***

WHEREAS AEGCL desires to engage the Contractor to the 'Ex-works Supply Contract' (also referred to as the 'First Contract') covering inter-alia supply of all equipment and materials for the complete execution of '***Supply of clamps, connectors and hardware fittings for Lower Assam Region in AEGCL'*** as detailed in the Contract Document ("the Facilities"), and the Contractor has agreed to such engagement upon and subject to the terms and conditions hereinafter appearing.

NOW IT IS HEREBY AGREED as follows:

Article 1
Contract Documents

1.1 **Contract Documents** (Reference SCC Clause 5.2.0)
The following documents shall constitute the Contract between the Purchaser and the Contractor, and each shall be read and construed as an integral part of the Contract:

(a) This Contract Agreement and the Appendices hereto
(b) Letter of Price Bid and Price Schedules submitted by the Contractor
(c) Letter of Technical Bid and Technical Proposal submitted by the Contractor
(d) Special Conditions of Contract
(e) General Conditions of Supply and Erection.
(f) Specification(Purchaser's Requirements)
(g) Drawings (Purchaser's Requirements)
(h) Other completed Bidding Forms submitted with the Letters of Technical and Price Bids
(i) Guaranteed and other Technical Particulars (as submitted with the Bid).
(j) Any other documents shall be added here

1.2 **Order of Precedence** (Reference SCC Clause 5.2.0)
In the event of any ambiguity or conflict between the Contract Documents listed above, the order of precedence shall be the order in which the Contract Documents are listed in Article 1.1 (Contract Documents) above.

1.3 **Definitions** (Reference SCC Clause 5.1.0)
Capitalized words and phrases used herein shall have the same meanings as are ascribed to them in the SCC.

Article 2
Contract Price and Terms of Payment

2.1 **Contract Price** (Reference SCC Clause 5.7.0)
The Purchaser hereby agrees to pay to the Contractor the Contract Price in consideration of the performance by the Contractor of its obligations hereunder. The Contract Price shall [. . . ***amounts in rupees in words*** . . .], [. . . ***amounts in figures***. . .] as specified in Price Schedule No. 3 (Grand Summary).
The Contract Price is fixed.

2.2 **Terms of Payment** (Reference SCC Clause 5.8.0)
The terms and procedures of payment according to which the Purchaser will pay the Contractor are given in the Appendix (Terms and Procedures of Payment) hereto.

Article 3 Commencement Date and Completion Time

3.1 **Commencement Date** (Reference SCC Clause 5.6.1)
The Commencement Date upon which the period until the Time for Completion of the Works shall be counted from is the date when this Contract Document is signed.

3.2 **Completion Time** (Reference SCC Clause 5.6.2)
The whole works under the scope of this Contract shall be completed within **4** (**Four)** months from Contract Commencement Date.

Article 4. Appendices

4.1 The Appendices listed in the attached List of Appendices shall be deemed to form an integral part of this Contract Agreement.

4.2 Reference in the Contract to any Appendix shall mean the Appendices attached hereto, and the Contract shall be read and construed accordingly.

IN WITNESS WHEREOF the Purchaser and the Contractor have caused this Agreement to be duly executed by their duly authorized representatives the day and year first above written.

Signed by, for and on behalf of the Purchaser	Signed by, for and on behalf of the Contractor
[***Signature***]	[***Signature***]
[***Title***]	[***Title***]
in the presence of	in the presence of
[***Signature***]	[***Signature***]
[***Title***]	[***Title***]

APPENDICES

Appendix 1 - Special Conditions of Contract
Appendix 2 - Completion schedule (bar chart)
Appendix 3 - List of delivery destinations
Appendix 4 - Performance Security.
Appendix 5 - Price Schedule.
Appendix 6 - Guaranteed Technical Particulars

Appendix 4 - Form of Performance Security
Bank Guarantee

(To be stamped in accordance with Stamp Act)
(The non-Judicial Stamp Paper should be in the name of issuing Bank)

Bank's Name:
Address of Issuing Branch or Office:
Email id and phone no for correspondence:

Beneficiary: Managing Director, AEGCL
Name and Address of Purchaser

Bid Security No.:

*WHEREAS*_____ *[name and address of Contractor]* (hereinafter called "the Contractor") has undertaken, in pursuance of LoA No. _____ dated _____ to execute _____ *[name of Contract and brief description of Works]* (hereinafter called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized/scheduled bank for the sum specified therein as security for compliance with its obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible *to* you, on behalf of the Contractor, up to a total of _____ *[amount of Guarantee]* _____ *[in words],* such sum being payable in the currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ *[amount of Guarantee]* as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

BG expiry date:
BG clam date:

Bank's seal and authorized signature(s)

NOTE

1. *All italicized text is for use in preparing this form and shall be deleted from the final document. An amount is to be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract.*
2. *This guarantee shall be valid upto 30 days beyond the Warranty Period as per the Contract.*
3. *For BG amount equal to or more than 50,000.00, BG should be signed by two bank officers to be valid.*
4. ***Address of the banker with email and phone number for correspondence with banker should be clearly mentioned. Any correspondence related to the BG with the banker shall be made to the address mentioned in the BG.***