BIDDING DOCUMENT

FOR

Supply, erection and commissioning of battery bank, battery charger and DCDB for Upper Assam Region in AEGCL

ASSAM ELECTRICITY GRID CORPORATION LIMITED

BID IDENTIFICATION NO:
AEGCL/MD/O&M/Battery Bank and Charger/UAR/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. (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, erection and commissioning of battery bank, battery charger and DCDB for Upper 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 Battery Bank, Charger and DCDB.

b) Erection, Testing and commissioning of Battery Bank and Charger to AEGCL site.

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

d) Transit insurance and insurance during storage at site till commissioning shall be in the scope of the contractor.

1.4.0 TIME SCHEDULE:

The successful bidder shall have to complete the works within **6 (Six) 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. 1,28,62,867.00 (Rupees One Crore Twenty Eight Lakh Sixty Two Thousand Eight Hundred Sixty Seven 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 product(s), 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 110 V and 220 V DC battery bank, Charger and DCDB. 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 supplied 10 nos. of 110 V or above voltage class battery and battery charger in last 5 years which are in successful operation for at least 2 (two) years.

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 a Transmission/Generation/Distribusion utility in 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. 1,28,00,000.00 (Rupees One Crore Twenty-Eight Lakh Only)**. 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. 51,00,000.00**, 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. Details of consignee, destination of delivery and contact nos. etc 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/Online EMD payment receipt**, (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):

EMD amount mentioned in BDS must be submitted online through e-tendering portal. Copy of the EMD payment receipt should be submitted along with Techno-Commercial bid. Alternatively, if allowed bidders may submit EMD BG from schedule banks in favour of Managing Director, AEGCL 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/ Online EMD payment receipt**,

(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, erection and commissioning of battery bank and battery charger for Upper Assam Region in AEGCL
Location of Work	Upper Assam Region
NIT No.	
Bid Identification No.	AEGCL/MD/O&M/Battery Bank and Charger/UAR/2021/BID
Estimate(In Indian Rupees)	**Rs. 1,28,62,867.00 (Rupees One Crore Twenty-eight Lakh Sixty-two Thousand Eight hundred sixty-seven only) including taxes.**
Earnest Money Deposit (EMD)	**Rs. 1,28,000.00** (Rupees One Lakh Twenty Eight 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., 10.06.2021** **Tender submission start date: 10:00 Hrs., 24.06.2021** **Tender clarification end date: 17:00 Hrs., 29.06.2021** **Tender submission end date and time: 12:00 Hrs., 07.07.2021** **Techno-commercial bid opening date: 14:00 Hrs., 08.07.2021**

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.	Filled up Form EXP-2		
17.	Filled up Form EXP-3		
18.	Order/Contract copies establishing supplying offered product in past		
19.	Performance certificate of offered product		
20.	Order/Contract copies establishing bidders experience in State/Central Utilities		
21.	Document establishing manufacturing unit details		
22.	GTP and drawings		
23.	Type test reports		
24.	Completion schedule bar chart		
25.	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 bidder's 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/Battery Bank and Charger/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 _____.

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, erection and commissioning of battery bank and battery charger for Upper Assam Region 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)
(NOT APPLICABLE. EMD TO BE SUBMITTED ONLINE THROUGH E_TENDER PORTAL)

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/Battery Bank anrd Charger/LAR/2021/BIDd

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	Item Description	Qty	Unit Price (Rs)	Unit F&I (Rs)	Unit Erection, Testing & Commissioning (Rs)	Total (D+E+F) (Rs)
A	B	C	D	E	F	G
1	220V 400Ah VRLA Battery Bank with Battery Stand and all other fittings and accessories as per specification (Sonabil)	6				
2	110V 300Ah VRLA Battery Bank with Battery Stand and all other fittings and accessories as per specification (Dhekiajuli, Ghoramari, Halflong, Srikona, Pailapool)	9				
3	220 Volt Battery Charger with all fittings and accessories. (Sonabil)	4				
4	110 Volt Battery Charger with all fittings and accessories. (Dhekiajuli, Ghoramari, Halflong, Srikona, Pailapool)	11				

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, manufacture, supply and delivery of Battery Bank and Charger.

b) Erection, Testing and commissioning of Battery Bank and Charger to AEGCL site.

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

d) Transit insurance and insurance during storage at site till commissioning shall be in the scope of the contractor.

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 SPECIFICATION

This section of the specification covers the design, manufacture, and testing at manufacturer's work, of stationary type sealed, Valve Regulated Lead Acid Battery Bank, Dual FCBC Battery Charger complete with all required accessories for various Sub-stations.

These equipments are to be complete in every respect, details to the functions designated to the entire satisfaction of the purchaser. It is required that the supplier accepting the contract agrees to furnish all apparatus, appliances and material whether specifically mentioned or not but which may be found necessary to complete, to perform and testing any of the herein specified equipment (s) for compliance with the requirements implied without extra charges. The erection/maintenance tools and specific tools if any will also form part of supply.

3.3.1. Type Tests

(i) The Battery, Battery Charger and MCCBs offered shall be fully type tested as per relevant Indian Standard/IEC. Equipment which has never been tested for critical performance by a NABL accredited testing laboratory shall not be accepted. In such cases, a promise or

agreement by a bidder to have the equipment tested after award of a contract is not acceptable.

(ii) Test reports to be acceptable must be related directly to the equipment offered. The Bidder shall furnish type test reports with the technical bid such as relevant drawings and specification so that test reports can be linked to the offered equipment. **Test reports for a similar or higher class of equipment are acceptable with a commitment to perform the type test on the particular equipment after the contract is awarded, free of any charges**.

(iii) The above said test reports submitted with the offer shall not be older than **five years**, prior to the date of opening of bid.

3.3.2. General Technical Requirement

All the materials/components used in Battery Chargers and Valve Regulated Lead Acid Battery (VRLA) shall be free from flaws and defects and shall conform to relevant standards and good engineering practices:

Bidder shall select number of cells, float and Boost voltage to achieve requirements as specified in clauses hereafter:

3.3.3. BATTERY BANK

3.3.3.1. TYPE AND RATING

A. For 110 V DC Battery Bank

i) Stationary type, sealed, valve regulated lead acid battery bank suitable for operation on 110 Volts D.C. system to meet loads like emergency lightning, control and signaling circuits, relays, breaker operations, circuit breaker spring charging, indicating circuits, etc. shall be required. The stationary battery shall comply with the provisions of IS: 15549/IEC 60896.
ii) The Ampere-hour capacity of the battery bank at 27°C at 10 hours discharge rate shall be **300 AH**.
iii) The nominal voltage of the battery bank shall be 110 Volts D.C.
iv) The number of cells in a complete battery bank set shall be 55 plus 2 spares.
v) The maximum voltage during float operation shall not be more than 121 V.
vi) Minimum voltage available when no charger is working and battery fully discharged up to 1.85 V per cell, shall not be less than 99 V.

B. For 220 V DC Battery Bank

i) Stationary type, sealed, valve regulated lead acid battery tank suitable for operation on 220 Volts D.C. system to meet loads like emergency lightning, control and signaling circuits, relays, breaker operations, circuit breaker spring charging, indicating circuits, etc. shall be required. The stationary battery shall comply with the provisions of IS: 15549/IEC 60896.
ii) The Ampere-hour capacity of the battery bank at 27°C at 10 hours discharge rate shall be **400 AH**.

iii) The nominal voltage of the battery bank shall be 220 Volts D.C.
iv) The number of cells in a complete battery bank set shall be 110 plus 2 spares.
v) The maximum voltage during float operation shall not be more than 242 V.
vi) Minimum voltage available when no charger is working and battery fully discharged up to 1.85 V per cell, shall not be less than 198 V.

3.3.3.2. **PLATES**

Positive plates shall be made of flat pasted type using lead-cadmium-antimony alloy for durability, high corrosion resistant, maintenance free, long life both in cyclic as well as in ,float applications.
Negative plates shall be heavy duty, durable flat plate using lead calcium alloy pasted box grid. Negative plates shall be designed to match the life of positive plates and combination of negative and positive plates shall ensure long life, durability and trouble free operation of battery.

PLC operated equipment should be deployed for preparation of paste to ensure consistency in paste quality. Conventional / manual type of paste preparation is not allowed.

3.3.3.3. **CONTAINER AND LID**

The containers and lids shall be made of a special grade polypropylene copolymer plastic material. They shall be sufficiently robust and not liable lo deformation under internal operating pressures and within the temperature range naturally encountered, leak proof, non-absorbent and resistant to the acid with low water vapour permeability.

3.3.3.4. **VENT PLUGS**

Each cell shall be equipped with one-way safety valve with opening pressure of 5±1 psi and closing pressure 4±1 psi. The vent plug shall be made with suitable grade of fire retardant plastic material. Each valve opening shall be covered with flame barrier capable in preventing the ingress of flame into the cell interior when the valve opens and hydrogen / oxygen gas mixture is released.

3.3.3.5. **Flame Arrestors**

Each cell shall be equipped with a Flame Arrestor to defuse the Hydrogen gas escaped during charge and discharge. Material of the flame arrestor shall not affect the performance of the cell.

3.3.3.6. **SEPARATORS**

Separator shall be made of spun glass, micro porous matrix and shall be resistant to Sulphuric Acid. It shall be capable of keeping the entire electrolyte and shall be electrically insulated. Sufficient separator overlap and PVC shield protection to top and bottom edges of the plates is to be provided to prevent short circuit formation between the edges of adjacent plates.

3.3.3.7. **CONNECTORS**

The connectors shall be lead coated copper of suitable size to join the cells. The connectors shall be suitably designed and coated to withstand corrosion due to sulphuric acid. The coating should be adequate and tenacious. All the copper inter cell connectors shall be provided with heat shrinkable sleeves except at the connecting points.

3.3.3.8. **ELECTROLYTE:**

The electrolyte shall be prepared from the battery grade Sulphuric Acid confirming to IS: 266. The batteries shall be supplied in factory filled and charged condition.

3.3.3.9. **WATER**

Water required for preparation of electrolyte shall conform to IS: I069.

3.3.3.10. **PLATE CONNECTION**

Lugs of plates of like polarity shall be connected by lead burning to a horizontal strap having an upstanding terminal post adopted for connection to external circuit. Strap and post shall be caste with lead alloy. The positive and negative terminal posts shall be clearly marked for unmistakable identification.

3.3.3.11. **BOLTS AND NUTS**

Nuts and Bolts for connecting the cells shall be of superior grade passivated Stainless steel.

3.3.3.12. **TERMINALS**

Terminals shall be of integral lead terminal with solid copper core with M6 threading for fastening. The junction between terminal posts and cover and between the cover and container shall be hermetically sealed.

3.3.3.13. **BATTERY RACKS**

Batteries shall be installed on MS racks to be supplied by the Contractor to fit in the battery room. Racks/Trays shall be powder coated with anti-corrosive paint. Rack shall accommodate 55/110 cells plus 2 spares. Racks/Tray shall be suitably treated before

painting for protection against fungus growth and other harmful effects due to tropical environment.
The colour of the supporting racks shall conform to shade 631 of IS: 5.

3.3.3.14. The permissible self-discharge rate shall be less than 3% of the obtained capacity per month at 27°C when tested as per the relevant clause of the IS 15549

3.3.3.15. The Ah efficiency as measured in conformance with the relevant IS shall not be less than 90%.

3.3.3.16. The Wh efficiency as measured in conformance to the relevant IS shall not be less than 80%.

3.3.3.17. The Oxygen recombination efficiency as measured in conformance with the relevant clause of IS1549 shall be not less than 95%

3.3.3.18. The charging instructions shall be provided along with the batteries.

3.3.3.19. **Capacity Requirements**

When the battery is discharged at 10 hour rate, it shall deliver 80% of C (rated capacity, corrected at 27º Celsius) before any of the cells in the battery bank reaches 1.85V/cell.
The battery shall be capable of being recharged from the fully exhausted condition (1.75V/cell) within 10 hrs up to 90% state of charge. All the cells in a battery shall be designed for continuous float operation at the specified float voltage throughout the life.
The capacity (corrected at 27ºCelcius) shall also not be less than C and not more than 120% of C before any cell in the battery bank reaches 1.75V/cell. The battery voltage shall not be less than the following values, when a fully charged battery is put to discharge at C/10 rate:

a. After Six minutes of discharge: 1.98V/cell
b. After Six hours of discharge: 1.92V/cell
c. After 8 hours of discharge: 1.85V/cell
d. After 10 hours of discharge: 1.75V/cell

Loss in capacity during storage at an average ambient temperature of 35º Celsius for a period of 6 months shall not be more than 60% and the cell/battery shall achieve 85% of its rated capacity within 3 charge/discharge cycles and full rated capacity within 5 cycles, after the storage period of 6 months. Voltage of each cell in the battery set shall be within 0.05V of the average voltage throughout the storage period. Ampere hour efficiency shall be better than 90% and watt hour efficiency shall be better than 80%.

3.3.3.20. **Expected Battery Life**

The battery shall be capable of giving 1200 or more charge/discharge cycles at 80% Depth of discharge (DOD) at an average temperature of 27º C. DOD (Depth of Discharge) is defined as the ratio of the quantity of electricity (in Ampere-Hour) removed from a cell or battery on discharge to its rated capacity.
The battery sets shall have a minimum expected life of 20 years at float operation.

3.3.3.21. **Accessories along with Battery System**

Each battery shall be supplied with following accessories and devices:

(a) Torque Wrench.

(b) Cell Test Voltmeter (-3-0-+ 3) Volts with least count of 0.01 Volt

3.3.3.22. **TYPE TEST OF BATTERY**

The Bidder/Supplier shall supply type tested battery per IS 15549: 2004/IEC 60896-21 & 22 over the range of at least one capacity per design and should have met requirement of Service Life test as per above stated IEC standards within last seven years. The Bidder shall submit necessary evidences enclosed along with tender documents.

Sr.No	Description
1	Gas Emission
2	High Current Tolerance
3	Short Circuit Current and DC internal resistance
4	Protection against internal ignition from external spark source
5	Protection against ground short propensity
6	Content & durability of required marking
7	Material Identification
8	Valve Operation
9	Flammability Rating of material
10	Intercell connector performance
11	Discharge Capacity
12	Charge Retention during storage
13	Float Service with daily discharge for reliable mains power
14	Recharge behavior
15	Service life at an operating temperature of 32 deg C for brief duration exposure time
16	Impact of stress temperature of 60^{o}C for brief duration exposure time with 3 hours discharge test
17	Abusive Over discharge
18	Thermal runway sensitivity
19	Low temperature sensitivity
20	Dimensional sensitivity at elevated internal pressure & temperature
21	Stability against mechanical abuse of units during installation

3.3.3.23. **Routine Test of Battery**

1. Physical examination test
2. Visual Inspection

3. Dimensions, Mass & Layout
4. Marking & Packing

3.3.3.24. **Acceptance Test of Battery**

1. Polarity Marking
2. Verification of Dimensions
3. Test of AH Capacity.

3.3.3.25. **Installation and Commissioning**

Contractor/Manufacturer of battery shall install Battery Bank, as recommended in O&M manual/or relevant standards. All necessary instruments, materials, tools and tackles required for installation, testing at site and commissioning are to arranged by battery Contractor/manufacturer.

3.3.3.26. **MARKING AND PACKING:**

MARKING:

The following information shall be indeligibly and durably marked on the outside of the cell.

(a) Nominal Voltage
(b) Manufacturer's name, type and model name.
(c) AH capacity at 10 hour rate.
(d) Voltage for float operation at 20 deg. C with tolerance of (+/-) 1%.
(e) Month & year of manufacturer
(f) Country of origin.
(g) S.No. of cell/cell No.

PACKING:

The cells shall be suitably packed so as to avoid any loss or damage during transit.

3.3.3.27. **INSTRUCTION MANUAL:**

The manufacturer shall supply one copy of instructions manual for initial charging (if required)/treatment, and routine maintenance during service, with each and every battery set. The manufacturer shall supply 5 copies of instructions manual to the purchaser.
The following information shall be provided on, the instruction cards.

(a) Designation of cell or battery
(b) Ampere hour capacity.
(c) Nominal voltage
(d) Manufacturer's instructions for charging
(e) Voltage for float operation at 20 deg. C with tolerance (+/-) 1%.
(f) Maintenance instructions
(g) Environmental & safety provisions required.

3.3.3.28. **DRAWINGS:**

The tenderer will submit the detailed dimensional drawings for battery sets including stands.

3.3.3.29. **GUARANTEED TECHNICAL PARTICUALRS:**

Guaranteed Technical Particualrs for battery sets as per Schedule-3.1 attached shall be furnished along with the tender.

3.3.3.30. **ACCESSORIES:**

Each battery set shall be supplied complete with all necessary accessories viz. stand, inter connections, cell no. Plates with sticker, multi meter complete with leads, spanners.

3.3.3.31. **BILL OF MATERIAL:**

The manufacturer shall also have to furnish the bill of material used in battery set.

3.3.4. BATTERY CHARGING EQUIPMENTS

3.3.4.1. **GENERAL DESCRIPTION**

The Battery Chargers as well as their automatic regulators shall be of static type and shall be Compatible with offered VRLA batteries.

The battery charging equipment shall have following two separate Boost-cum Trickle Charger sections:

a. Section-1: Float Charger Section
b. Section-2: Float-cum-Boost Charger Section

Each section shall have its own rectifier transformer, Rectifier Bridge and other equipment so that each section can operate independent of each other.

The Charger shall regulate the float/boost voltage in case of prescribed temperature rise of battery as per manufacturer's recommendation to avoid thermal runaway. Necessary temperature sensors shall be provided in mid location of battery banks and shall be wired up to the respective charger for feedback control. The manufacturer shall demonstrate this feature during testing of each charger.

3.3.4.2. **CHARGER RATING**

A) For 220 Volt DC System

1. Section-1: Float Charger Section (FC):

(i)	Input Voltage	: 415+/- 10% volts three phase, 4 wire, 50 Hz A.C.
(ii)	Output Voltage	: 220 Volt (Nominal).
(iii)	Output Voltage Range	:2.13 to 2.27 Volt per cell (Continuously Settable)
(iv)	Total Output DC Current	: 35 Amp

2. Section-1: Float cum Boost Charger Section (FCBC):

(i)	Input Voltage	: 415+/- 10% volts three phase, 4 wire, 50 Hz A.C.
(ii)	Output Voltage	: 220 Volt (Nominal).
(iii)	Output Voltage Range	:2.13 to 2.50 Volt per cell

(iv) Total Output DC Current : 110 Amp

B) For 110 Volt DC System

1. Section-1: Float Charger Section (FC):

(i) Input Voltage : 415+/- 10% volts three phase, 4 wire, 50 Hz A.C.
(ii) Output Voltage : 110 Volt (Nominal).
(iii) Output Voltage Range :2.13 to 2.27 Volt per cell (Continuously Settable)
(iv) Total Output DC Current : 25 Amp

2. Section-1: Float cum Boost Charger Section (FCBC):

(i) Input Voltage : 415+/- 10% volts three phase, 4 wire, 50 Hz A.C.
(ii) Output Voltage : 110 Volt (Nominal)
(iii) Output Voltage Range :2.13 to 2.50 Volt per cell (Continuously Settable)
(iv) Total Output DC Current : 85 Amp

3.3.4.3. **OPERATION AND CONTROL**

Both the Charger Sections shall be capable for charging the battery and supplying the load simultaneously. The Float-cum-Booster charger section shall be operated either in float mode or in boost-cum-standby float charger mode.

Under normal operating condition, with the input AC supply present, the 'Float Charger Section' shall supply the DC load and also float the battery by trickle charging and the 'Float cum Boost Charger Section' shall be kept in hot standby mode.

In the event of main AC supply failure, the Sub-station DC load shall be automatically change over to the battery without any interruption. Similarly, after restoration of AC supply the normal operating condition shall be restored automatically and without any interruption.

Under normal operating condition, with the input AC supply present and battery requires boost charge, the battery shall be automatically change over to 'Float cum Boost Charger Section'automatically. Similarly, after completion of Boost Charging, the battery shall be automatically to 'Float Charger Section'. During this Boost Charging operation, `the float charger section' shall supply the load current only while boost charger section of 'Float cum Boost Charger Section' shall boost charge the battery and the load supply shall be disconnected from the battery through a contact of a contactor. If the 'Float Charger Section' fails during this period, the battery shall maintain load through tap cell diode, connected at suitable cell (to limit the DC load voltage to 110% of the specified Nominal Voltage, even at maximum Boost Charging voltage), instantaneously without any interruption of the DC load supply. If the incoming AC supply or the boost charger fails during boost charging, all the cells shall be connected to the load bus through the contact of the same contactor mentioned above.

All Battery Chargers shall be provided with facility for both automatic and manual control of output voltage and current. A selector switch shall be provided for selecting the mode of output

voltage/current control, whether automatic or manual. When on automatic control mode during Float charging, the Charger output voltage shall remain within +1% of the set value, for AC input voltage variation of +10%, frequency variation of +5%, a combined voltage and frequency variation of +10%, and a DC load variation from zero to full load.

All battery chargers shall have a constant voltage characteristic throughout the range (from zero to full load) at the floating value of the voltage so as to keep the battery fully charged but without harmful overcharge.

All chargers shall have load limiters having drooping characteristic, which shall cause, when the voltage control is in automatic mode, a gradual lowering of the output voltage when the DC load current exceeds the Load limiter setting of the Charger. The Load-limiter characteristics shall be such that any sustained overload or short circuit in DC System shall not damage the Charger, nor shall it cause blowing of any of the Charger fuses. The Charger shall not trip on overload or external short circuit.

Uniform and step less adjustments of voltage setting (in both manual and automatic modes) shall be provided on the front of the Charger panel (FC) covering the entire float charging output range specified. Step less adjustments of the Load limiter setting shall also be possible from 80% to 100% of the rated output current for charging mode.

During Boost Charging, the Battery Charger (FCBC in Boost Mode) shall operate on constant current mode (when automatic regulator is in service). It shall be possible to adjust the Boost charging current continuously over a range of 50% to 100% of the rated output current for Boost charging mode.

The Charger output voltage shall automatically go on rising, when it is operating on Boost mode (FCBC), as the Battery charges up. For limiting the output voltage of the Charger, a potentiometer shall be provided on the front of the panel, whereby it shall be possible to set the upper limit of this voltage anywhere in the output range specified for Boost Charging mode.

The Charger manufacturer may offer an arrangement in which the voltage setting device for Float charging mode is also used as output voltage limit setting device for Boost charging mode and the Load-limiter of Float charging mode is used as current setting device in boost charging mode.

Suitable filter circuits shall be provided in all the chargers to limit the ripple content (Peak to Peak) in the output voltage to 1%, irrespective of the DC load level, when they are not connected to a Battery.

An indicative logic of operation of FC & FCBC is furnished below:

System Condition	Battery Status	Charger Mode	FC	FCBC	Battery	Load
AC Mains Available	Battery full charged	FCBC on AUTO	ON	OFF	Supplied by FC	Supplied by FC
AC Mains Available	Battery requires boost	FCBC on AUTO	ON	ON	Supplied by FCBC in Boost	Supplied by FC

System Condition	Battery Status	Charger Mode	FC	FCBC	Battery	Load
					mode	
AC Mains Available	Battery requires boost	FCBC on AUTO	FAIL or OFF	ON	Supplied by FCBC in Float mode	Supplied by FCBC
AC Mains Available	Irrespective of battery condition	FCBC on Manual Float	ON	OFF	Supplied by FC	Supplied by FC
AC Mains Available	Irrespective of battery condition	FCBC on Manual Float	FAIL or OFF	ON	Supplied by FCBC in FLOAT mode	Supplied by FCBC
AC Mains Available	Irrespective of battery condition	FCBC on Manual Boost	ON	ON	Boost charged by FCBC	Supplied by FC
AC Mains Available	Irrespective of battery condition	FCBC on Manual Boost	FAIL or OFF	ON	Supplied by FCBC in Float mode	Supplied by FCBC
AC Mains Available	-	FCBC on any Boost	OFF	OFF	On discharge	Battery will supply to load

3.3.4.4. **MCCB**

All Battery Chargers shall have 2 Nos. MCCBs on the input side to receive cables for two charger sections. It shall be of P2 duty and suitable for continuous duty. MCCB's should have auxiliary contacts for annunciation, status for Substation Automation System.

3.3.4.5. **Rectifier Transformer**

The rectifier transformers shall be continuously rated, dry air cooled (A.N) and of class F insulation type. The rating of the rectifier transformer shall have 10% overload capacity.

3.3.4.6. **Rectifier Assembly**

The rectifier assembly shall be fully/half controlled bridge type and shall be designed to meet the duty as required by the respective Charger. The rectifiers hall be provided with heat sink having their own heat dissipation arrangements with natural air cooling. Necessary surge protection devices and rectifier type fast acting HRC fuses shall be provided in each arm of the rectifier connections. Rectifier fuse fail shall come into annunciation.

3.3.4.7. **Instruments**

One AC voltmeter and one AC ammeter along with selector switches shall be provided for each charger sections. One DC voltmeter and DC ammeter (with shunt) shall be provided for all Charger sections. The instruments shall be flush type, dust proof and moisture resistant. The

instruments shall have easily accessible means for zero adjustment. The instruments shall be of 1.5 accuracy class. In addition to the above a centre zero voltmeter with selector switch shall also be provided for each charger sections for testing purpose. All instruments shall be with digital displays

3.3.4.8. **AIR BREAK SWITCHES**

Each circuit breaker shall be equipped with auxiliary switches with sufficient number of contacts for control, indication and interlocking purposes. Ten normally open and ten normally closed contacts shall be provided as spares. All contacts shall be rated for the DC voltage specified in data sheet.

3.3.4.9. **Fuses**

Fuses wherever specified shall be HRC Link type. Fuses shall be mounted on fuse carriers which are in turn mounted on fuse bases. Wherever it is not possible to mount fuses on carriers, fuses shall be directly mounted on plug-in type base. In such case one insulated fuse pulling handle shall be supplied for each charger. Fuse rating shall be chosen by the Bidder depending on the circuit requirement. All fuses in the chargers shall be monitored. Fuse failure annunciation shall be provided on the failure of any fuse.

3.3.4.10. **Blocking Diode**

Blocking diode shall be provided in the positive pole of the output circuit of each charger to prevent current flow from the DC Battery into the Charger.

3.3.4.11. **Annunciation System**

Audio-visual indications through bright LEDs shall be provided in each Charger sections for the following abnormalities:

a) AC power failure, Charger –I/Charger-II
b) Rectifier/chargers fuse blown.(For Charger-I & Charger-II)
c) Over voltage across the battery when boost charging.
d) Abnormal voltage (High/Low)
e) DC earth fault relay
f) Charger –I/Charger-II in Float/Boost mode
g) DC over load relay.
g) Any other annunciation if required.

Potential free NO Contacts of above abnormal conditions shall also be provided for common remote indication “CHARGER TROUBLE” in Purchaser’s Control System. Indication for charger in float mode and boost mode through indication lamps as well as for control room indication shall be provided for chargers. A potential free contact for float/boost mode shall be provided for external interlocks.

3.3.4.12. **Analogue and Digital Inputs**

Following Analogue and Digital Inputs shall be provided for Purchaser’s substation automation/SCADA purposes in the Charger. The analogue inputs shall be generated by distinct transducers. These inputs shall be wired up to respective terminal blocks. The Digital Inputs shall be potential free:

Analogue Inputs
(i) Voltage of Battery
(ii) Current of Battery from Charger

Digital Inputs
(i) Charger Fails
(ii) Charger Float/Boost Mode

3.3.4.13. **Charger Construction**

The Chargers shall be indoor, floor-mounted, self-supporting sheet metal enclosed cubicle type. The Contractor shall supply all necessary base frames, anchor bolts and hardware. The Chargers shall be fabricated from 2.0mm cold rolled sheet steel and shall have folded type of construction. Removable gland plates for all cables and lugs for power cables shall be supplied by the Contractor. The lugs for power cables shall be made of electrolytic copper with tin coat. Power cable sizes shall be advised to the Contractor at a later date for provision of suitable lugs and drilling of gland plates. The Charger shall be tropicalized and vermin proof. Ventilation shall be of forced type by providing minimum 2 numbers fans, so that there shall be continuous expulsion of hot air in the charger cabinet. For inlet air Ventilation louvers, shall be provided and be backed with screens. All doors and covers shall be fitted with synthetic rubber gaskets. The chargers shall have hinged double leaf doors provided on front and on backside for adequate access to the Charger's internals. All the charger cubicle doors shall be properly earthed. The degree of protection of Charger enclosure shall be at least IP-43 as per IS: 13947 Part I.

All indicating instruments, control switches and indicating lamps shall be mounted on the front side of the Charger.

Each Charger shall be furnished completely wired upto power cable lugs and terminal blocks and ready for external connections. The control wiring shall be carried out with PVC insulated, 1100V grade1.5 sq.mm.stranded copper wires. Control terminals shall be suitable for connecting two wires, with 2.5 sq.mm stranded copper conductors. All terminals shall be numbered for ease of connections and identification. Each wire shall bear a ferrule or tag on each end for identification. At least 20% spare terminals shall be provided for control circuits.

The insulation of all circuits, except the low voltage electronic circuits shall withstand test voltage of 3 KV AC for one minute. An air clearance of at least ten (10) mm shall be maintained throughout for such circuits, right up to the terminal lugs. Whenever this clearance is not available, the live parts shall be insulated or shrouded.

3.3.4.14. **Painting**

All sheet steel work shall be pre-treated, in tanks, in accordance with IS:6005. Degreasing shall be done by alkaline cleaning. Rust and scale shall be removed by pickling with acid. After pickling, the parts shall be washed in running water. Then these shall be rinsed in slightly alkaline hot water and dried. The phosphate coating shall be `Class-C' as specified in IS:6005. Welding shall not be done after phosphating. The phosphating surfaces shall be rinsed and passivated prior to application of stoved lead oxide primer coating. After primer application, two coats of

finishing synthetic enamel paint of shade-692 (smoke grey) of IS:5 shall be applied, unless required otherwise by the Purchaser. The inside of the chargers shall be glossy white. Each coat of finishing synthetic enamel paint shall be properly staved. The paint thickness shall not be less than fifty (50) microns.

3.3.4.15. **TESTS AND INSPECTION**

Battery Chargers shall conform to all type tests as per relevant Indian Standard Performance test on the Chargers as per Specification shall also be carried out on each charger as per specification. Rectifier transformer shall conform to all type tests in IS: 4540 and short circuit test as per IS: 2026. Following type tests shall be carried out for compliance of specification requirements:-

i). Voltage regulation test.

ii). Load limiter characteristics test

iii). Efficiency tests

iv). High voltage tests

v). Temperature rise test

vi). Short circuit test at no load and full load at rated voltage for sustained short-circuit.

vii). Degree of protection test

viii). Measurement of ripple by oscilloscope.

ix). Temperature compensation feature demonstration

The battery charger and all the components of the charger shall be routine tested accordingly to their relevant standard. This shall include the following:

(a) Operational check for boost cum float charger.
(b) Input / Output test of the chargers.
(c) Performance test of the charger.
(d) Temperature rise test of the rectifier transformer.
(e) Power frequency H.V. test / Insulation tests.
(f) Output quality of DC i.e. ripples to be measured at factory and during commissioning test.

NB: **Charger will be rejected during testing, if the ripples are not within the guaranteed limit**.

The Contractor shall be required to demonstrate to the Purchaser that the Chargers conform to the specification particularly regarding continuous rating, ripple free output, voltage regulation and load limiting characteristic, before despatch as well as after installation at site. At site the following tests shall be carried out:

i) Insulation resistance test

ii) Checking of proper annunciation system operation.

iii) Testing for ripple.

The Contractor shall present for inspection, the type and routine test certificates for the following components whenever required by the Purchaser.

(i) Switches.
(ii) Relays/ MCCBs
(iii) Instruments.
(iv) DC fuses.
(v) SCR.
(vi) Diodes.
(vii) Condensers.
(viii) Potentiometers.
(ix) Semiconductor
(x) Enunciators.
(xi) Control wiring
(xii) Push buttons and contactors.

Makes of above equipment shall be subject to Purchaser's approval.

3.3.4.16. **DOCUMENTATION**

The successful bidder shall submit four sets of drawings for AEGCL approval.

The following drawing shall be supplied with the tender: -

(i) Outline drawings of all apparatus showing sufficient details to enable the purchaser to determine whether the design proposed can be installed satisfactorily or not.

(ii) Wiring diagram of battery charger.

3.3.5. DC Distribution Board

3.3.5.1. **General Features**

The D.C. distribution boards shall be indoor, floor mounting of self-supporting, sheet metal clad, and cubicle type. The panels should be totally enclosed, dust tight and vermin proof and shall be made of 2.0 mm cold rolled sheet steel. The boards shall be provided with double leaf hinged doors at the back. All doors and covers shall be fitted with rubber gaskets. The doors shall be provided with locks and duplicated covers.

3.3.5.2. **Bus Bar**

The bus bars shall be of electrolytic copper of ample cross-section. The bus bars shall be insulated from the structure by means of durable, non-hydroscopic, non-combustible and non-tracking materials.

3.3.5.3. **Detail Requirements**

The 220/110 Volts D.C. distribution boards shall be provided with the following:

1. Mains failure alarm relay.
2. Earth fault alarm relay.
3. 220/110 Volts D.C. bell to be operated by the mains failure alarm relay.
4. 220/110 Volts D.C. buzzer to be operated by the earth failure alarm relay.
5. 3 Nos. Double pole air-break circuit breaker/MCCB of 400 amp capacity with thermal overload tripping arrangement to act as follows:
   (i) One for DC Source-1 (incomer 1)
   (ii) One for DC Source-2 (incomer 2)
   (iii) One for Bus Section
6. 0-300/0-150 volts D.C. moving coil voltmeter to measure the bus-bar voltage. The display is to be in digital.
7. Pilot lamp to indicate D.C. on conditions.
8. 220/110 volts, double pole MCBs of following ratings for outgoing feeders.
   <u>For 220 V DCDB.</u>
   (i) 32 Amp, 4 Nos.
   (ii) 63 Amp, 2 Nos.
   <u>For 110 V DCDB</u>
   (i) 32 Amp, 6 Nos.
   (ii) 63 Amp, 4 Nos.
9. One terminal Board/block for all feeder outlets including cable glands.

3.3.5.4. **Automatic Supply Changeover**

Outlets including outlets including Automatic changeover between Incomer I and Incomer II is to be carried out during the failure of supply in any of one the incomers. After the restoration of the supply, system shall be restored to normal condition automatically. The requirement of changeover under various conditions are as below:

Under normal conditions i.e. when supply is available in both the incomers, incomers 1 & 2 of DCDB shall be in closed condition and Bus couplers breaker shall be in open condition.

In case of failure of either of the sources, the incomer of that source shall trip and Bus coupler shall get closed. On restoration of supply, normal conditions described above are to be established

3.3.5.5. **Analogue and Digital Inputs**

Following Analogue and Digital Inputs for Purchase's substation automation/SCADA purposes shall be provided. The analogue inputs shall be generated by distinct transducers. These inputs shall be wired up to respective terminal blocks. The Digital Inputs shall be potential free:

Analogue Inputs

(i) Voltage of Bus Section-I
(ii) Voltage of Bus Section-II
(iii) Current from Source-I
(iv) Current from Source-II

Digital Inputs

(i) Incomer-I breaker On/Off
(ii) Incomer-II breaker On/Off
(iii) Bus Section Breaker On/Off
(iv) 220/110 Volt DC earth fault

3.3.6. SUPERVISION IN ERECTION, TESTING AND COMMISSIONING

Bidders should note that, the equipment covered under this bidding document shall be used as backups to the already existing similar equipment in existing substations. The scope includes installation of battery banks, chargers and DCDB. Erection, testing and commissioning shall also inclusive of all costs for inter connections between charger to battery, Charger to DCDB, Charger to Purchaser's AC sources etc. However, necessary cables required will be supplied by the Purchaser.

SCHEDULE – 3.1

GUARANTEED TECHNIICAL AND OTHER PARTIICULARS
(To be filled in by Bidder and shall be furnished with the Technical Bid)

1.0 BATTERY

Sl. No.	Description	Particulars	
		220 Volt	110 Volt
(a)	Name & Address of Supplier & Manufacturer		
(b)	Manufacturer's type designation		
(c)	Capacity in ampere hour (at 27° C, C10 to 1.75 ECV)		
(d)	Nominal cell **voltage** (volts)		
(e)	No. of cells		
(f)	Capacity at different rates of discharge		
	(a) 1 hour		
	(b) 2hour		
	(c) 3 hour		
	(d) 5 hour		
	(e) 8 hour		
(g)	Ah efficiency		
(h)	Wh **efficiency**		
(i)	Maximum short circuit current capacity		
(j)	Self discharge per week		
(k)	Cyclic life of the **battery** @ 27° C		
(l)	Service life expectancy		
(m)	**Recommended Maximum** period of storage		

Sl. No.	Description		Particulars	
			220 Volt	110 Volt
(n)	Positive Plates			
	(a) No of plate per cell			
	(b) Type of plate			
	(c) Total surface area of plate			
	(d) Grid Material			
(o)	Negative Plates			
	(a) No of plate per cell			
	(b) Type of plate			
	(c) Total surface area of plate			
	(d) Grid Material			
(p)	Material of Container			
(q)	Type of separator			
(r)	Terminal			
(s)	Safety valve	Opening pressure - Closing pressure -		
(t)	Painting Battery racks			
(u)	Type of material			
(v)	Insulators material (for racks and cells)			
(w)	Complete weight of the cell			
(x)	Net weight of each battery bank			
(y)	Overall dimensions of each battery- bank			
(z)	**Method** *of connection between cells*			
(aa)	Protection for terminals			
(bb)	Recommended Charging			
	a) Float Mode Charging	(i) Voltage (ii) Current		
	b) Boost Mode Charging	(i) Voltage (ii) Current		
(cc)	Time required to charge the battery from fully discharged condition to 9O% SOC in boost mode at 27°C			
(dd)	Amount and specific gravity of electrolyte per cell required for first filling at 27°C			
(ee)	Specific gravity of electrolyte when fully charged at 27°C			
(ff)	Maximum electrolyte temperature that cell can withstand continuously without injurious effects.			
(gg)	Short circuit current at Battery terminals			
(hh)	Time for which the battery can withstand short circuit at terminals			
(ii)	Internal resistance of each cell			
	i) Full charged condition			
	ii) Fully discharged condition			

2.0 BATTERY CHARGER

S No.	Description	Particulars	
		220 Volt System	110 Volt System
1.0	Name & Address of Manufacturer		
2.0	Standard applicable		
3.0	Current rating of Charger		
4.0	Type of transformer used for charger		
5.0	Rating of the transformer		
6.0	Voltage ratio of the transformer		
7.0	Phase		
8.0	Frequency		
9.0	Winding connection		
10.0	Class of insulation		
11.0	Impedance of the transformer		
12.0	Reference standard		
13.0	Type of charger control		
14.0	Whether over current/over voltage features provided ?		
15.0	Facilities for boost charging		
16.0	Types of alarms		
17.0	Type of protection against short circuit and overloads		
18.0	Type of protection at charger's output terminals		
19.0	Protection for thyristor if installed		
20.0	Output voltage range under (preset values)		
	(a) Float Charger Section		
	(b) Boost Charger Section		
21.0	The output controllable current range		
22.0	Max. current and voltage output of the charger		
23.0	Protection against overcharging		
24.0	Details of Automatic Voltage Regulator		
25.0	Manual suitable pots for controlling maximum current and voltage at charger's output		
26.0	Kind of indicating meters provided on the charger's panel		
27.0	Blocking diode installed		
28.0	Whether necessary annunciations and functional status are provided for microscada/SAS?		
29.0	% of Ripple of Output voltage		
30.0	Whether forced ventilations provided.		

3.0 DC Distribition Board

S No.	Description	Particulars	
		220 Volt System	110 Volt System
1.0	Name & Address of Manufacturer		

2.0	Detail dimensions of D.C.D.B		
3.0	Thickness of steel sheets proposed to be used		
4.0	Thickness of steel sheets proposed to be used Busbars: a. Standard applicable: b. Material and cross section: c. Current ratin d. Type of insulator		
5.0	Details of wiring: a. Cross-section: b. Voltage grade : c. Solid or stranded: d. Material		
6.0	Details of Instruments: a. Standards Applicable: b. Manufacturer's name and type: c. Range: d. Accuracy class		
7.0	Details of air break switches and fuses (manufacturer's name, type, rating, capacity etc.)		
8.0	D.C. Air Circuit Breakers: a. Manufacturer's name: b. Type : c. Standard Applicable: d. Rated Voltage: e. Rated continuous current: f. Rated making/breaking current: g. Overload/short circuit current release setting range:		
9.0	Details of relays, if used		

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 **6(Six) 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, erection and commissioning of battery bank, battery charger and DCDB for Upper 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, erection and commissioning of battery bank, battery charger and DCDB for Upper 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 **6** (**Six)** 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.***