	INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY VIGYAN PATH, PASCHIM BORAGAON, GUWAHATI – 781035.

TECHNICAL BID DOCUMENT

FOR

36kV RMU unit

FOR 33/.433 kV SUBSTATION OF IASST, ASSAM

	INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY VIGYAN PATH, PASCHIM BORAGAON, GUWAHATI – 781035.

36kV RMU unit

FOR 33/.433 kV SUBSTATION OF IASST, ASSAM

Paschim Boragaon,Guwahati-35.

Issue letter of Bid – Document

One set of Bid Document as per content is issued to :-

Name of Contractor/Firm
……
….

Address of Communication
……..

……
……

Mobile No : ……

No.IASST/_____/2020-21/ Date :……

Photograph

Registrar,
IASST

INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY, PASCHIM BORAGAON, GUWAHATI-781035

AdvtNo: **Date:**

E-Tender Inquiry No.:

NOTICE INVITING TENDERS

(National Competitive Bidding)

For and on behalf of President of India, the Director, IASST, invites online bids under two-bid system (technical bid and price bid) at CPP portal http://eprocure.gov.in/eprocure/app from eligible and qualified bidders for supply and installation of36kV RMU unit

FOR 33/.433 kV SUBSTATION OF IASST, ASSAM

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1.

Tender Specification	Time of Completion	Estimated Cost in INR	EMD in INR
36kV RMU unit FOR 33/.433 kV SUBSTATION OF IASST, ASSAM	90 Days	22,00,000.00 (Excluding GST)	44,000.00

2.

Critical Dates		**Date**	**Time**
1.	Date of Online Publication of Tender Documents in CPP portal	12.01.2021	1100Hrs.
2.	Dates of Tender DocumentStart	12.01.2021	1700Hrs.
3.	Download End	31.01.2021	1600Hrs.
4.	Deadline for seeking further information/ clarification through email	28.01.2021	1300Hrs.
5.	Date of Pre-Bid Meeting	21.01.2021	1400Hrs.
6.	Dates of Online Submission of Tender Start	30.01.2021	1100Hrs.
7.	End	01.02.2021	1700Hrs.
8.	Deadline for Physical Submission of Cost of Tender Documents and EMD/ Bid Security	01.02.2021	1400Hrs.
9.	Time and Date for Opening of Tender Bid	01.02.2021	1500Hrs.
10.	Time and Date for Opening of Financial Bid	Will be communicated online after technical evaluation	

Last date of submission of bid is extended upto 28/02/2021

4. Tender documents may be downloaded from the above websites. The bidders must pay non-refundable fee of Rs. 2000/- (Two Thousand only) in the form of Account Payee Demand Draft, from any of the commercial bank in India, in favour of Director, Iasst, payable at Guwahati on or before the deadline fixed.

5. All tender must be accompanied with EMD/Bide Security as mentioned in Sl.No.1 in favour of Director, IASST, and Payable at Guwahati, in the manner prescribed in bidding documents on or before the deadline fixed.

6. In the event of the above mentioned tender opening date being declared as a holiday/ closed day for the purchase organization, the tenders will be opened on the next working day at the appointed time.

7. Bids shall be received online at the website of CPP portal https://eprocure.gov.in/eprocure/app.

8. Aspiring bidders who have not enrolled/registered in CPP portal are advised to enrol/register before participating through the portal. The portal enrolment is free of cost. The bidders are advised to go through the instructions provided at the concern section "Instruction for online bid submission".

9. The bidder will be at liberty to be present either in person or through an authorised representative, who must carry 'Bid Acknowledgement Receipt' at the time of opening of bid or can view the bid opening event online at their remote end.

Date:
Place:

Registrar
IASST, PaschimBoragaon
Guwahati-781035

(a) Terms and conditions :

A) Technical Eligibilty :

Only the qualified and registered electrical contractors/firms who have satisfactorily completed similar worksRef (1.2.2 and 1.2.3)of magnitude specified below may apply.

1.2.1 Three similar works each of value not less than Rs. 8.8 lakhs or two similar works each of values not less than Rs. 13.2 lakhs or one similar work of value not less than Rs. 19.8 lakhs in last 5 years ending previous day of last date of submission of Tender.

1.2.2 The BREAKER shall meet the criteria for compact, metal-enclosed outdoor switchgear in accordance with IEC 62271-200, IEC 60694: It shall include, within the same metal enclosure, the number of MV functional units required for connection, power supply, i.e.:s witch disconnectors, earthing switches.

1.2.3The RMU should be fixed type, SF6 insulated, Vacuum circuit breakers with 3-O/C and 1- E/F relay (with IDMT and HS element) for the protection of the outgoing cable / Compact Substation. It should be maintenance free equipment having stainless steel robotically welded IP-67 enclosure.

1.2.4 The equipment offered shall be type tested from ERDA/CPRI or any other Test house of World repute. The Manufacturer shall have to produce Type Test Certificates of offered equipment and type test report shall not be older than 5 (five) as on date of opening of the bid

B) FincialEligibilty

a) **Shall have average financial turnover of Rs22.00 lakh on similar works during the last three years ending 31st march 2019.**
b) **Should not have incurred any loss in more than two years during the last five years ending 31st march 2019.**
c) **Shall have a solvency of Rs 8.8lakh duly certified by bank not earlier than 6 (six) months from date of submission of bids.**

(b) **BIDS shall be submitted in two envelops** :

Envelope – 1 :- Technical Bid in CPWD Form 7/8 along with earnest Money deposit Tender shall be accompanied with earnest money of Rs.0.44 lakhs (Rupees Only Fouty four thousand) only as follows:-
50% of earnest money i.eRs. 0.22 lakhswill have to be deposited in the shape of Demand Draft/ Call Deposit / Bankers cheque/FDR of a scheduled Bank issued in favour of Director, IASST, PaschimBoragaon, Ghy-35 and balance **50% of amount of earnest money can be accepted in the form of Bank Guarantee** issued by a scheduled Bank having validity for 6 months or more from the last date of receipt of tenders.

Envelope – 2:- Price bid filling up the BOQ issued with Tender document.

Evaluation of Technical Bid :- The Envelope – 1 will be opened first it will be evaluated in terms of criteria for evaluation as per CPWD norms (refer Annexure I of Appendix 20 of CPWD works Manual 2014). A bidder who scores minimum 60% marks in each of the categories (a) to (f) individually and scores minimum 70% on overall marks will qualify for price bid opening. Bidders who qualify for price bid opening shall be informed by the Institute. **No Sub contractors will be allowed and Contractor who show promise of early completion of**

abovework in less thanspecificallywork duration will be preferred with appropriate reward as per CPWD manual 2014.

1.1.1.1. **Bids opening :-** The technical bid opening will be done in the presence of contractors who wish to witness the bid opening. Price bid opening will also be done in presence of contractors who have qualified for price bid opening. The Bidder's designated representative is invited to attend a pre-bid meeting, if provided for in the tender documents**.** The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

Date : Registrar
Place: IASST, PaschimBoragaon
Guwahati –

INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY,
PASCHIM BORAGAON,
GUWAHATI – 781 035.

1.0 Introduction :

1.1 The Institute of Advanced Study in Science and Technology, PaschimBoragaon, Guwahati-35, is a research and training organisation registered under the Societies Registration Act. The institute is funded by the Govt. of India for maintenance and research activities in specific areas of national and regional importance.

1.2 IASST intends to qualify for execution works with technical super visions and quality control of the jobs specify the works for the institutional complex of IASST in their own land at PaschimBoragaon, Guwahati – 35.

1.3 The objectives of this document is to pre-qualify the contractors for empanelment on evaluation based on feed back provided for the specialised job to be executed on item rate contract. The procurement and supply of materials, plant and machineries will also be a part of the job unless otherwise decided. The bidder shall have necessary testing facilities for quality control or in association with recognised agencies as per requirement of I.S. and other relevant codes. The fields testing facilities during execution of works must also be provided.

2.0 Scope of works:

2.1The BREAKER shall meet the criteria for compact, metal-enclosed outdoor switchgear in accordance with IEC 62271-200, IEC 60694: It shall include, within the same metal enclosure, the number of MV functional units required for connection, power supply, i.e.:s witch disconnectors, earthing switches.

2.2The equipment offered shall be type tested from ERDA/CPRI or any other Test house of World repute. The Manufacturer shall have to produce Type Test Certificates of offered equipment and type test report shall not be older than 5 (five) as on date of opening of the bid

2 Philosophy of Execution :

The work is proposed to be executed on competitive bids from the selected list of the contractors on bid documents of IASST. The contractor will have total responsibility of delivering the products with their expertise on planned execution of the works with

mobilization of necessary manpower with plants and machinery required for the specific job to the least botheration and entire satisfaction of IASST.

3 Document /Information to be furnished by the Bidder: (Envelope – I)

(a) Financial Analysis – details to be furnished duly supported by figures in balance sheet / profit & loss account for the last five years (2015-16, 2016-17, 2017-18, 2018-19, 2019-20) duly

certified by the Chartered accountant, as submitted by the applicant to the Income Tax Department (Copies to be attached) as per FORM "A".

(b) Solvency certificate from bankers of the bidder in the prescribe as per FORM "B".

(c) Copies of work orders, performance and completion certificates etc. from the clients for similar works executed and completed in the last five financial years (2015-16, 2016-17, 2017-18, 2018-19, 2019-20) ending last day of the month ……. As per FORM 'C', FORM 'D', FORM 'E'.

(d) Copies of original documents defining the constitutional and legal status, place of registration & business of the company / firm / partnership firm / individual etc. as per FORM 'F'.

(e) Proposed site organization chart indicating bio-data of key personnel (as per FORM 'G')

(f) Details of construction equipment's, machinery, tools & tackles as well as testing facilities available (as per FORM 'H')

(g) Copies of valid ITC and GST.

(h) Valid electrical contractor licence and supervision licence upto 11 KV.

(i) PF registration and copy of certificate thereof.

(j) Power of attorney in the name of person signing the application/ bid .

(k) Quality assurance plan along with list of recognised test houses proposed for various tests.

(l) Bidder may furnish any further information as considered necessary.

Instruction to Bidders :

(i) Information furnished will be kept confidential.

(ii) All pages of this bid document to be signed and returned with the bid.

(iii) Each document furnished along with the bid will be required to be signed by person / person holding power of attorney on behalf of the organisation.

(iv) (a) Bids shall be submitted in sealed cover marked with **"Envelope-I" and "Envelope – II" and clearly mentioned the work name & name of the Bid.**

(b) IASST shall not be responsible for any delay, loss or non-receipt of bids. Delayed bids or bids received in late shall not be considered.

(c) FAX / Mail bids shall not be entertained.

(d) For any discussion / clarification required on the bids, respective bidder shall be intimated in due course after opening of the bids.

(v) The bidder must submit a copy of the recent passport size photo with the self attested.

Date :
Place:

Registrar
IASST, PaschimBoragaon,
Guwahati – 35.

Bidders should meet the following requirements :

(a) The requisite quantum of work as shown will be substantiated by completion certificate from the competent project authority. In case of work is in progress, the certificate of proportionate progress in consistent to the schedule of completion will be furnished from the competent project authority.

(b) Contractors should have well experienced technical group of persons of appropriate qualification to manage the infrastructure project and ensure quality control of materials and construction activities.

(c) The bidder should have sufficient number of plants and machinery and construction equipment's in running conditions for exclusive use in this work.

(d) For testing the quality of materials and construction etc. contractors should have their own facilities / collaboration with repute test houses of Guwahati with IASST's approval, testing will be undertaken with these test houses as per standard codes of practice.

(e) The bidder should be well conversant with statutory labour and industrial laws of the country and its proper implementation to the maximum extent.

FORM 'A'

Financial Information :

Financial Analysis – details to be furnished duly supported by figures in balance sheet / profit & loss account for the last five years (2015-16, 2016-17, 2017-18, 2018-19, 2019-20) duly certified by the Chartered Accountant, as submitted by the applicant to the Income Tax Department (Copies to be attached)

YEARS

(i) Gross Annual turn over on construction works.

(ii) Profit /s

(iii) Financial arrangements for carrying out the proposed work.

(iv) Solvency Certificate from Bankers of the bidder in the prescribed FORM 'B'

Signature of Chartered Accountant with seal

Signature of Bidder(s)

FORM 'B'

FORM OF BANKERS' CERTIFICATE FROM A SCHEDULED BANK

This is to certify that to the best of out knowledge and information the M/s Shri / Mr. …….. having marginally noted address, a customer of out of bank is / are respectable and can be treated as good for any engagement upto a limit of Rs……. (Rupees ……..)

This certificate is issued without any guarantee or responsibility on the bank or any of the officers.

Signature
For the Bank

Note : 1. Bankers certificates should be on letter head of the Bank, sealed in cover addressed to tendering authority.
2. In case of partnership firm, certificate should include names of all partners as recorded with the Bank.

FORM 'C'

DETAILS OF ALL WORKS OF SIMILAR CLASS COMPLETED DURING THE LAST FIVE YEARSENDING LAST DAY OF THE MONTH …….

1	2	3	4	5	6	7	8	9	10

1. Sl. No :
2. Name of work / project and location :
3. Owner or sponsoring organiszation :
4. Cost of work in Lakh of rupees :
5. Date of commencement as per contract :
6. Stipulated date of completion :
7. Actual date of completion :
8. Litigation arbitration cases pending / in progress with details :
9. Name & address / telephone No. of officer to whom reference may be made :
10. Remarks :

Indicate gross amount claimed and amount awarded by the Arbitrator.

Signature of Bidder(s)

FORM 'D'

PROJECTS UNDER EXECUTION OR AWARDED

1	2	3	4	5	6	7	8	9	10

1. Sl. No :
2. Name of work / project and location :
3. Owner or sponsoring organization :
4. Cost of work in Lakh of rupees :
5. Date of commencement as per contract :
6. Stipulated date of completion :
7. Upto date percentage of progress of work :
8. Reason of slow progress if any :
9. Name & address / telephone No. of officer to whom reference may be made :
10. Remarks :

Certified that the above list of works is complete and no work has been left out and that the information given is correct to my knowledge and belief.

Signature of Bidder(s)

FORM 'E'

PERFORMANCE REPORT OF WORKS REFERRED TO IN FORMS 'B' & 'C'

1. Name of work / project & location
2. Agreement No.
3. Estimated cost.
4. Tendered cost
5. Date of start
6. Date of completion
   (i) Stipulated date of completion
   (ii) Actual date of completion

7. Amount of compensation levied for delayed completion, if any
8. Amount of reduced rate items, if any
9. Performance Report
   (a) Quality of work very good/good/fair/poor
   (b) Financial soundness very good/good/fair/poor
   (c) Technical proficiency very good/good/fair/poor
   (d) Resourcefulness very good/good/fair/poor
   (e) General Behaviour very good/good/fair/poor

Dated: Executive Engineer or Equivalent

FORM 'F'

STRUCTURE & ORGANISATION

1. Name & address of the bidder
2. Telephone No / Fax No
3. Legal status of the bidder (attached copies of original document defining the legal status)
   (a) An individual
   (b) A proprietary firm
   (c) A firm in partnership
   (d) A limited company or Corporation
4. Particulars or registration with various government Bodies (attach attested photocopy)

Organisation /place or registration	Registration No.
1.	
2.	

5. Names and titles of Directors& Officers with designation to be concerned with this work.
6. Designation of individuals authorised to act for the organisation.
7. Was the bidder ever required to suspend construction for a period of more than six months continuously after he commenced the construction? If so, give the name of the project and reasons of suspension of work.
8. Has the bidder, or any constituent partner in case of partnership firm, ever abandoned the awarded work before its completion? If so, give name of the project and reasons for abandonment.
9. Has the bidder, or any constituent partner in case of partnership firm, ever been debarred / black listed for tendering in any organisation at any time? If so, give details.
10. Has the bidder, or any constituent partner in case of partnership firm, ever been convicted by the court of law? If so, give details.

11. In which field of electrical engineering construction the bidder has specialization and interest?

FORM 'G'

Organisation chart :

Graduate Electrical Engineer 10 yearsexperience = 1 No

Diploma Holder Electrical = 1 No

Work Supervisor = 1 No

With appointment latter.

Signature of Bidder(s)

FORM 'H'

List of Equipment:

Construction :	**Batch No**	**Capacity**	**Nos**
1. Insulation Test Magar-			
2. Earth Test Magar -			

Signature of Bidder(s)

TECHNICAL SPECIFICATIONS FOR OUTDOOR TYPE NON-EXTENSIBLE 36 KV COMAPCT RING MAIN UNIT SWITCHGEAR

3.1.0 GENERAL TECHNICAL REQUIREMENTS

3.1.1. SCOPE

This section of specification covers the design, manufacture, assembly under stringent quality control at every stage of manufacturing, testing at manufacturer's works before dispatch, supply and delivery at destination and supervision of erection, testing and commissioning of 36 kV, 630 A RMU with the enclosure for the proposed 33/.433 kV substation at IASST premise. . The scope of supply shall also include necessary special tools and plants required for erection, maintenance and necessary spares, required for normal operation and maintenance of the RMU for a period of five years.

The RMU should be complete in all respects with insulators, bimetallic connectors, temperature sensors, necessary auxiliaries and enclosure, supporting structures, accessories, etc., described herein and briefly listed in the schedule of requirements. The spares/attachments which are meant necessary for the smooth functioning of the RMU and specifically are not mentioned here shall be assumed to be included the scope of supply.

The RMU should be fixed type, SF6 insulated, Vacuum circuit breakers with 3- O/C and 1-E/F relay (with IDMT and HS element) for the protection of the outgoing cable / Compact Substation. It should be maintenance free equipment having stainless steel robotically welded IP-67 enclosure.

3.1.2. SITE CONDITION :

Temperature :
Max. : 50 deg C
Min : 5 deg C
Avg : 32 deg C
Humidity :
Max : 100%
Min : 10%
Pollution : highly polluted Class III

3.2.0 REFERENCE STANDARD:

3.2.1 All equipment and material shall be designed manufactured and tested in accordance with the latest applicable IEC standard.
3.2.2 Equipment and material conforming to any other standard, which ensures equal or better quality, may be accepted. In such case copies of English version of the standard adopted shall be submitted.

3.2.3 The electrical installation shall meet the requirement of Indian Electricity Rules, 1956 as amended up to date, relevant IS code of practice and Indian Electricity Act, 1910. The ElectricityAct, 2003 shall also apply. In addition other rules and regulations applicable to the work shall be followed. In case of any discrepancy, the most stringent and restrictive one shall be binding.
3.2.4 The high-tension switchgear offered shall in general comply with the latest issues including amendments of the following standards but not restricted to them.

RELEVANT IEC / IS

1.	IEC60694: IS12729	Common clauses for high-voltage switchgear and control standards (for voltages exceeding 1000 V
2	IEC62271-200	A.C. Metal-enclosed switchgear and control gear
3	IEC 60129	Alternating current dis-connectors (isolators) and earthing switches
4	IEC 60529: IS 13947	Classification of degrees of protection provided by enclosures -IP 67 for tank with high voltage components -IP 2X for the front covers of the mechanism -IP 3X for the cable connection covers -IP 54 for the outdoor enclosure (kiosk)
5	IEC 60265	High voltages switches Part 1
6	IEC 62271-100: IS 13118	High Voltage AC Circuit Breakers, General Requirement.
7	RAL 7035	Colour for ready mixed paints and enamels, Code of practice for phosphating of iron and steel.
8	IEC 60044-1	Current Transformers and Voltage Transformers
9	IEC 60255	Electrical Relays
10	IEC 60 9135	High Voltage testing techniques.
11	IEC 62271-102	AC disconnections and earthing switches,

3.3.0 DESIGN CRITERION

Service conditions

The 36 kV BREAKER shall be suitable for operations at an altitude up to 1000 meters, as per IEC 60120, above sea level. The BREAKER shall be capable of operating normally within the following temperature range:
- Maximum ambient temperature : + 50 ° C
- Minimum ambient temperature : + 5 ° C

Manufacturer shall declare whether BREAKER is able to operate in air temperature higher than + 50 °C and if current de-rating is necessary. The BREAKER shall be capable of being electrically commanded. And BREAKER shall be suitable for future motorization. The

BREAKER shall be capable of being exposed to high relative humidity and polluted environments. The BREAKER shall be suitable for outdoor use.

3.3.1 DESIGN PARAMETERS

- ✓ Network Three phases - Three wires
- ✓ Rated Voltage 36 kV
- ✓ Service Voltage 33 kV
- ✓ System Frequency 50 Hz
- ✓ Lightning Impulse withstand Voltage, 170kV
- ✓ Power Frequency withstand voltage 70 kV rms - 1 mn
- ✓ Rated Normal Current, 630 Amps
- ✓ Rated Short time current withstand (1 sec) 25 kA
- ✓ Internal Arc 1 sec 25 KA
- ✓ Rated Short circuit making capacity of line switches &breaker 62.5KA
- ✓ Number of operations at rated short circuit current on breaker 20 OC operations
- ✓ No load line / cable breaking current capacity – 25A
- ✓ Number of mechanical operations of line switch 1000 O/C
- ✓ Number of mechanical operations of Earth switch 1000 O/C
- ✓ Number of electrical operations at full rated current for breaker -2000 O/C
- ✓ Number of Mechanical operations at full rated current for breaker -2000 O/C
- ✓ Insulating Gas SF6
- ✓ Nominal operating gas pressure 1.4 bar abs, 20 Deg Cent
- ✓ Gas leakage rate per Annum in percentage 0.1% per annum
- ✓ Facilities for gas monitoring Required
- ✓ Expected operating life time 30 years
- ✓ Rated operating sequence of Circuit Breaker 0-0.3 sec-CO-3 min-CO
- ✓ Total Opening time of Circuit breaker 25 – 30 ms
- ✓ Total Closing time of Circuit breaker 30 – 45 ms

All of the switchgear shall be capable of withstanding these parameters without any damage being caused, in accordance with the standards mentioned in this specification

3.4.0 RMU CONFIGURATION

2 (two) numbers of breaker feeders for 1.6 MVA 33/.433 kV transformers and 1 (one) incomer with load break switch

The following configurations shall be required:

3.4.1 Two outgoing transformer circuit breaker (vcb) will have the following –

- SF6 INSULATED VACUUM Circuit breaker 36 kV, 630 A , 25 kA

- Mechanism for motorised operation (with manual option) .
- Capacitive voltage indication fixed type
- ON, OFF, TRIP indication on the front mimic of the panel.
- Cable box for termination of cable up to 1 No. x 400/300 sq. mm 33 KV cable
- Emergency Trip Push Button.
- Set of 36kV Cable boots (Touch Proof) suitable for **1x 3C- 400/300 mm sq 33 KV**

3.4.2 Cable.

- relay must have the ABB make (50,51, 50N, 51N)
- Fault passage indicator
- Protection CTS , 60/ 1 amps, protection class – 5P20, burden to be selected as per relay requirement
- Metering CTS , 60/ 1 amps, Accuracy class –1.0, burden to be selected as per connected Ammeter and MFM
- Ammeter with selector switch

3.4.3 LOAD BREAK SWITCH FOR INCOMING FEEDER – 1 NOS.

Cable switch 36 kV, 630 A, 25 kA.

- Mechanism for motorised operation (with manual option with SNAP action)
- Capacitive voltage indication fixed type
- ON, OFF, EARTH indication on the front mimic of the panel.
- Cable box for termination of cable up to **1x 3C-400 sq. mm 33 KV cable**
- Set of 36kV Cable Boots suitable for **1x 3C-400 mm sq 33 KV cable.**
- Earth Switch with interlocking arrangement (2 NO + 2 NC)
- Auxiliary Switch for disconnector (2 NO + 2 NC)
- Manometer

3.5.0 MAKE OF MAIN / MAJOR EQUIPMENTS

- **MAKES OF 36 KV 3 Way RMU: ABB/ SCHNEIDER/ L&T**
- **Make of Protection Relay : Schneider / ABB/SIEMENS**
- **Make of HT CT & PT : ABB/Scheneider/Eqv**
- **Make of MFM / TVM : SECURE/L&T/Scheneider**
- **Make of Indicating Instru : AE**

4.6.0 GENERAL TECHNICAL SPECIFICATION OF RMU

3.6.1 Introduction

The BREAKER shall meet the criteria for compact, metal-enclosed outdoor switchgear in accordance with IEC 62271-200, IEC 60694: It shall include, within the same metal enclosure, the number of MV functional units required for connection, power supply, i.e.:s witch disconnectors, earthing switches.

3.6.2 Switchboards

The switchgear and busbar shall all be contained in a stainless steel enclosure filled with SF6 at 1.4 bar at 20° C relative pressure to ensure the insulation and breaking functions. Sealed for life, the enclosure shall meet the "sealed pressure system" criterion in accordance with the IEC 62271-1 standard: "a volume for which no further gas processing is required during

its entire expected life. In addition, manufacturer shall confirm that maximum leakage rate is lower than 0,1 % / year. It shall provide full insulation, making the switchgear insensitive to the environment (temporary flooding, high humidity...), IP67 degrees of protection in accordance with recommendation IEC 60529. It shall provide full insulation, making the switchgear insensitive to the environment conditions such as pollution, humidity, dust, etc.The active parts of the switchgear shall be maintenance-free and the switchboard shall be low maintenance.

The switchgear shall provide IP2X degree protection with the exception of the MV cable entrance and earthing plug where entrance is admissible. The tank shall be made of 3 mm ANSI 304 unpainted stainless steel. The colour shall be RAL 7035 for the enclosure.
The switchboards shall be suitable for mounting on at trench, utilities space or base. Each switchboard shall be identified by an appropriately sized label which clearly indicates the functional units and their electrical characteristics.
The switchgear shall be designed so that the positions of the different devices are visible in its front panel; in addition the cubicle must have voltage indicators that allow check if any income or outcome is energized.
In accordance with the standards in effect, the switchboards shall be designed so as to prevent access to all live parts during operation without the use of tools.

3.6.3 Dielectric medium

SF6 gas shall be dielectric medium for BREAKER s. SF6 gas used for the filling of the BREAKER shall be in accordance with IEC 60376.

3.6.4 Bus bars

Comprising of 3 nos of single phase copper busbar and connected to the switch or circuit breaker. The bus bar should be integrated in the cubicle. Bus bars should be rated to withstand all dynamic and thermal stresses for the full length of the switchgear.

3.6.5 Earthing of metallic parts

There shall be continuity between the metallic parts of the switchboard and cables so that there is no electric field pattern in the surrounding air, thereby ensuring the safety of people.
The substation frames shall be connected to the main earth busbar without dismantling any busbar.

3.6.6 Earthing of the main circuit

The cables shall be earthed by an earthing switch with short-circuit making capacity; the earthing switch can only be operated when the cable switch is open. in compliance with IEC standard 62271-102. The earthing switch shall be fitted with its own operating mechanism. The speed of the manual as well as motorised closing, driven by a fastacting mechanism, is independent of the operator. Mechanical interlocking systems shall prevent access to the operating shaft to avoid all operator errors such as closing the earthing switch when the

cable switch is closed and the earthing switch operating shaft shall have a padlocking facility.

3.6.7 Earthing Switch

Earthing switch should be rated equal to the switchgear rating. Earthing switch should be Quick make type capable of making rated fault current. It can be operated from the front of the cubicle.

3.6.8 Circuit Breaker:

The circuit breaker inside SF6 chamber shall be consisting of Vacuum circuit breaker confirming to latest IEC standards. The CB shall be maintenance free. The breaker shall be capable of performing a full cycle O-0.3sec-CO-3min CO. The CB shall be three position independent operation. The disconnector operation is only possible when circuit breaker is open. The CB shall be suitable for up gradation for electrical operation in future. The CB shall be equipped with a self powered protection relay for over current and earth fault. The circuit breaker mechanism shall have mechanical endurance of at least 2000 mechanical operation. It shall be fitted with a local system for manual as well as motorised tripping by an integrated push button.

3.6.9 Disconnectors:

They shall be maintenance-free, with breaking in low pressure SF6 gas. The position indicator shall **provide positive contact indication** and reliability of indication in accordance with IEC 62271-102 standard. The switches shall be of the type E3 "increased operating frequency" in accordance with IEC 60265-1 standard. They shall have 3 positions with individual operating mechanism for network disconnector and earth switch , open-disconnected, closed and earthed, and will be constructed in such a way that natural interlocking prevents unauthorized operations.
The switches shall be fully mounted and inspected in the manufacturer's factory.

Manuals well as motorised opening and closing will be driven by a fast-acting mechanism, independent of operator action. Each load break switch shall be suitable for an electrical operation . The load break switch and earthing switch operating mechanism shall have a mechanical endurance of at least 1000 mechanical operations. An operating mechanism can be used to manually as well as motorisedly close the switch and charge the mechanism.

3.6.10. BREAKER bushings and Cable terminations

3.6.10.1 Bushing

The bushing should be conveniently located for working with of 3 core 300/400 Sq mm 33 kV cables specified and allow for the termination of these cables in accordance with the instructions supplied for the 630A M16 bolted connectors on line switches. The profiles of the cable connection bushings shall be in compliance with EN-50181 standards.

3.6.10.2 Cable clamps

A ferro-magnetic cable clamp arrangement must be provided for all network cables terminated on the BREAKER.

6.10.3. Padlocking facilities

Live load break switches and earthing switches can be locked in the open or closed position by means of padlocks introduced in holes of 8 mm diameter.

3.6.11. Voltage indicator lamps and phase comparators

Each function shall be equipped with a voltage indicator box on the front of the device to indicate whether or not there is voltage in the cables. The capacitive dividers will supply low voltage power to the lamps. Three inlets can be used to check the synchronization of phases.
This device shall be in compliance with IEC 61 958 standard.

3.6.12 Relay specification for transformer feeders of 33 KV. Protection Relay

The 33 KV compact switchgear shall be equipped with SELF POWER numerical MICROPROCESSOR BASE RELAY relays, to trip the circuit breakers. This relay shall have 3 O/C and 1 E/F element with IDMT & High Set characteristics, auxiliary relay for OTI/WTI/BUCHOLZ with trip and alarm arrangement. Lock out relay with hand reset type.

3.6.13. Fault locators / Fault passage indicator

The FPI shall facilitate quick detection of faulty section of line. The fault indication may be on the basis of monitoring fault current flow through the device. The FPI should be self-powered and should have internal lithium battery for external indication and setting of FPI in the absence of current.
The FPIs shall include:
Fault detection - Phase to phase and Phase to earth faults.
One potential-free output contacts for hardwiring to RTUs. On this basis, the SCADA/DMS will be able to monitor phase / earth fault condition.
Local fault indications - LCD display on FPI front panel along with LED indication on front panel of RMU enclosure.
Multiple reset option –
End of time delay (Adjustable from 2 to 16 Hrs)
Remote reset (Via potential free input contact of FPI)
Manual reset (Reset button on front panel of FPI)
Automatic reset on current restoration.
The characteristics of the FPIs shall include:
Phase fault thresholds configurable from at least 100 to 800 A
Earth fault thresholds configurable from at least 20 to 200 A
Multiple number of steps for adjusting phase and earth fault thresholds.

Fault current duration range configurable from at least 40 ms to 100 ms in 20 ms steps and further 100 ms to 300 ms in 50 ms steps.
Variations with respect to these characteristics may be acceptable as long as they prove applicable and provide the same or better flexibility.

3.6.14. Front plate

The front plate shall have an IP 3X degree of protection. The front plate shall include a clear mimic diagram which indicates the different functions. The position indicators shall give a true reflection of the position of the main contacts. They shall be clearly visible to the operator. The lever operating direction shall be clearly indicated in the mimic diagram. The manufacturer's plate shall include the switchboard's main electrical characteristics.

3.6.15. Cable insulation testing

The Cable testing is possible without disconnecting the cables from the bushing. It shall be preferable to carry out the phase by phase testing. The maximum test voltage shall be less than 50 kV DC for 15 minutes.

3.6.16 Finishing

The device shall be fully designed for use in a hot, humid atmosphere and shall be low maintenance.
At least two lifting rings shall be installed on the top of the switchboards for handling.

3.7.0 Safety of people

Any accidental overpressure inside the sealed tank will be limited by the opening of a pressure limiting device in the lower part of the enclosure. Gas will be released to the bottom and rear of the switchboard away from the operator. Manufacturer shall provide type test report to prove compliance with internal fault, according the relevant standards.

3.8.0 Type and routine tests

According to this specification and IS/IEC standards 60056, 62271-102, 60265, 62271-200,62271-105, 600529 and 60694, Bidder must have to submit type test certificates from NABL accredited Laboratory. The type test certificates should contain the following test reports:

- Impulse withstand test,
- Temperature-rise test,
- Dielectric test
- Arc fault test
- Short-time & peak withstand current test,
- Mechanical endurance / operation test,
- Checking of degree of protection,
- Switch, earthing switch making capacity.

- Switch, breaking capacity.
- Duty cycle test
- Internal arc withstand test for HT Chamber
- Checking of partial discharge on complete unit
- Degree of protection for Ip-54 for indoor endurance
- Test to verify true position indication device as per IEC 62271-102.

In addition, for switches, test reports on rated breaking and making capacity shall be provided. For earthing switches, test reports on making capacity, short-time withstand current and peak short-circuit current shall be provided.

The **routine tests** carried out by the manufacturer shall be backed by test reports signed by the factory's quality control department. They shall include the following:

- Conformity with drawings and diagrams,
- Power frequency High voltage withstand test
- Functional operation including interlocking /signaling/aux. device
- Measurement of closing and opening speeds,
- Checking of filling pressure,
- Checking of gas-tightness,
- Dielectric testing.
- Main circuit resistance measurement.
- Fuse combination mechanical checking.

Each type of H.V. Switchgear shall be completely assembled, wired, adjusted and tested at the factory as per the relevant standards and during manufacture and on completion.

3.9.0. Factory Acceptance Test

The acceptance tests shall include all the routine tests mentioned below and also **demonstration of tripping through the relay by secondary injection tests.** These tests shall be carried out in accordance with relevant standards but not necessarily limited to the following:

(a) Withstand voltage at Power Frequency for all current carrying parts including wiring

(b) Measurement of resistance of the main circuit -Extensible / extensible BREAKER

(c) Leakage test

(d) Withstand power frequency voltage on auxiliary circuits

(e) Operation of functional locks, interlocks, signaling devices and auxiliary devices

(f) Suitability and correct operation of protections, control instruments and electrical connections of the circuit breaker operating mechanism (primary & secondary injection)

(g) Verification of wiring

(h) Visual Inspection Routine test shall be carried out on all equipment such as circuit breakers, current transformers, relays, etc. as per relevant standards.

(i) Tripping and closing time of circuit breaker and load break switches.

3.10.0 DOCUMENTATION

An instruction manual should be provided with necessary information for receiving, handling, storage, installation, operation and maintenance.

Routine lest certificate should be follow each unit and standard schematic drawing should be delivered for RMU. The drawing of Compact switch gear should consist of – system single line drawing, general arrangement and schematic drawing for ordered unit.

All drawing shall confirm to international standard organization(ISO) “A” series of drawing sheets/ Indian standard specification IS: 11065. All dimensions and data shall be in ink and suitable for microfilming. All dimensions and data shall be SI unit.

3.10.1 List of drawing and documents:

The bidder shall furnish four sets of relevant descriptive and illustrative published literature, pamphlets and drawing for preliminary study along with offer

- General outline drawing showing dimensions and shipping weights, quality of insulating media
- Sectional view showing the general constructional features of the circuit breakers
- Including operating mechanism, arcing chamber, and contacts with lifting dimension for maintenance.
- Drawing showing control cabinets and circuit diagram for operating mechanism.
- Structural drawing for support structure
- Foundation plan and loading data and foundation design.
- Drawing showing the complete operational cycle of the RMU with description.

3.11.0 **TRAINING**

Installation of the switch gear should be required no special tools. Operational product training should be available at the manufacturer’s facility.

3.12.0 Quality

When requested by the customer, the supplier shall provide proof that he applies a quality procedure in compliance with the standard, namely:

- Use of a quality manual approved and signed by a top management representative,
- Periodic updating of the manual so that it reflects the quality control procedures in effect,
- ISO 9001and ISO 14001 certification.

SCHEDULE – 3.1

GUARANTEED TECHNICAL AND OTHER PARTICULARS 36 kV RMU

(To be filled in by Bidder)

Sr No	Particulars	To be Filled by BIDDER	
		33kV System	
1	General		
2	Name of manufacturer (OEM)		
3	Country of Origin		
4	Delivery from (location)		
5	Type & Designation		
6	**Type tested at Name of LaboratoryAddress of laboratory**		
7	**Installation (indoor or outdoor)**		
8	**Standards applicable**		
9	**No. of Phases**		
10	**Single or Three Phase design**		
11	**Service conditions**		
i	Ambient Air Temp. in Deg. C		
ii	Max Temp. in Deg. C		
iii	Min Temp. in Deg. C		
iv	Daily Average Temp. in Deg. C		
v	Solar Radiation W/sqmtr		
vi	Altitude above MSL, in mtr		
vii	Pollution class		
viii	Creep age distance, in mm/kV		
ix	Relative humidity		
x	Condensation		
xi	Vibration level		
xii	Noise level		
xiii	Induced Electromagnetic Disturbance, in kV		
xiv	Seismic conditions		
a	Vertical		
b	Horizontal		

Sr No	Particulars	To be Filled by BIDDER	
12	**Enclosure**		
i	Code of pressure vessel		
ii	Type of manufacturing		
iii	Design temperature in Deg.C		
iv	Material		
v	Material grade & applicable standard		
vi	Outside diameter in mm		
vii	Minimum Wall Thickness, in mm		
viii	Painting Shade & Thickness		
a	-External		
b	-Internal		
ix	Degree of Protection		
x	Inductance in H/mt		
xi	Capacitance in pF/mt		
xii	Resistance in Ohm/mt		
xiii	Expansion Bellow		
a	Material		
b	Min allowable adjustable displacement LongitudinalTransverse		
xiv	Sealing system		
a	Type		
xv	Estimated life in years		
xvi	Barrier		
a	Material		
b	Dielectric strength		
13	**Support Structure**		
i	Material		
ii	Minimum thickness of galvanizing		
iii	Foundation channels /Anchor bolts		
14	**Grounding**		
i	Grounding Material		
ii	Grounding of complete module		
iii	Grounding of individual compartment		
iv	Grounding at flange joints		
15	**System Parameters**		
i	Highest System voltage in kV		
ii	Rated voltage of System in kV		
iii	Rated voltage of Equipment in kV		
iv	Rated Insulation levelPhase to Earth and between Phases		

Sr No	Particulars	To be Filled by BIDDER	
a	One Min Power Frequency withstand voltage Vrms		
b	Lightning Impulse withstand voltage, kVp		
iv	Rated Frequency		
v	Rated current in Amp		
vi	Rated current at 50 °C (equipment) in Amp		
vii	Rated current at 50 °C (bus bar) in Amp		
viii	Rated short circuit withstand current kArms		
a	Duration in sec		
b	Peak, kAp		
ix	Enclosure withstand time for an internal faultin sec.		
x	Estimated total energy loss at		
	100 % of rated capacity		
	75 % of rated capacity		
	50 % of rated capacity		
	25 % of rated capacity		
xi	Measures taken to minimize Over Voltage		
xii	Phase labelling		
xiii	Auxiliary supply (AC Voltage, Frequency;**DC voltage)**		
	-Operation		
	-Control		
	-Illumination & heater		
16	**Delivery conditions**		
i	Bays fully assembled at works		
ii	Dimensions of longest section fortransportation		
iii	Weight of heaviest package		
iv	Pressure of SF6 gas during transportation		
v	SF6 gas monitoring system provided duringtransportation		
17	**SF6 Gas**		
i	Applicable standard		
ii	Quantity of SF6 Gas of complete MODULEat filling pressure, in kg		

Sr No	Particulars	To be Filled by BIDDER	
iii	Quantity of SF6 Gas of **largest** compartmentof MODULE at filling pressure, in kg		
iv	Nos of Gas compartments		
v	Quantity of SF6 Gas of **individual**compartment of MODULE at filling pressure, in kg		
vi	Maximum permissible dew point, in Deg.C		
vii	Composition of Gas		
a	SF6 > 99.90 % by weight		
b	Air < 500 ppm by weight (0.25 vol.%)		
c	CF4 < 500 ppm by weight (0.1 vol.%)		
d	H2O < 15 ppm by weight (0.012 Vol%)		
e	Mineral oil < 10 ppm by weight		
f	Acidity, in terms of HF < 0.3 ppm by weight		
g	Hydrolysable fluorides, In terms of HF < 1ppm by weight		
	PRESSURE	in Kg/cm^2	
vii	Design pressure		
a	Circuit breaker		
b	Other compartments		
ix	Rated filling pressure		
a	Circuit breaker		
b	Other compartments		
x	Type tested pressure.		
a	Circuit breaker		
b	Other compartments		
xi	Routine test pressure		
a	Circuit breaker		
b	Other compartments		
xii	Operating pressure of PRD		
a	Circuit breaker		
b	Other compartments		
xiii	Alarm Pressure		
a	Circuit breaker		
b	Other compartments		
c	CB lock out Pressure		
d	Over pressure signalling		
xiv	Maximum SF6 Gas leakage rate, in % peryear		

Sr No	Particulars	To be Filled by BIDDER	
xv	Density Monitor to be provided for eachIndividual gas compartment.		
	Pressure in Mpa should invariably be converted in to Kg/Sq cm		
18	**Circuit Breaker**		
i	Applicable standard		
ii	Type		
iii	Designation		
iv	Operating Mechanism type		
v	Nos. of phases		
vi	Rated current in Amp		
vii	Mechanical Endurance class		
viii	Electrical Endurance class		
ix	Restrike probability class		
x	Rated SC breaking current		
xi	Rated SC breaking current -single phase test		
xii	Rated Line charging breaking current		
xiii	Rated Cable charging breaking current		
xiv	Capacitor bank switching capability, BC1BC2		
xv	Inductive current		
xvi	Reactive current		
xvii	Out of phase making & breaking current		
xviii	Rated short line fault current		
xix	TRV characteristic		
xx	First Pole to Clear factor		
xxi	Nos. of interrupters per phase		
xxii	Type of arc control device provided, if any		
xxiii	Type of arcing contacts		
xxiv	Material of main contact		
xxv	Material of Arcing contacts		
xxvi	Filter material		
xxvii	Timings of operations		
a	-Opening at nominal control voltage		
	-Opening at minimum control voltage		
b	Closing time at nominal control voltage		
xxviii	Maximum pole discrepancy time Tripping Closing		

Sr No	Particulars	To be Filled by BIDDER	
xxix	Rated operating duty cycle		
xxx	Tripping Coils		
	-No of coils		
	-Rated Voltage		
	-Rated Current		
	-Rated Watts		
	-Resistance		
xxxi	Closing Coil		
	-Rated Voltage		
	-Rated Current		
	-Rated Watts		
	-Resistance		
xxxii	Spring Charging Motor		
	-Rated Voltage		
	-Rated Current		
	-Rated Watts		
xxxiii	Spring charging time at rated Aux supply		
xxxiv	Spring charging time at min Aux supply		
xxxv	Maintenance required after nos. of operationat		
i	No load		
ii	Rated current		
iii	25% of rated SC current		
iv	50% rated SC current		
v	Rated SC current		
e	Provision of anti pumping		
f	No of operations after switching off of motorAux. supply		
xxxvi	Provision of Manual trip		
xxxvii	Electrical interlocking		
xxxviii	Padlocking		
xxxix	Type of Operation counter provided		
19	**DISCONNECTORS**		
i	Applicable standards		
ii	Type		
iii	Rated current in Amp for		
	-Bus disconnector		
	-Line disconnector		
	-Transformer disconnector		
	-PT disconnector		

Sr No	Particulars	To be Filled by BIDDER	
iv	Maximum Current that can be safelyinterrupted by the Isolator (Amp).		
	-Inductive		
	-Capacitive		
v	Rate Short time withstand Current in kA, for3 sec		
Vi	Rated peak short time Current, kAp		
Vii	Rated bus charging current, in Amp		
Viii	Type of contacts		
Ix	Material of contacts		
X	Current Density at minimum cross section, A/mm^2		
Xi	Rated lightning impulse withstand voltageacross the open gap, kVp		
Xii	Rated Power Freq withstand voltage acrossthe open gap, kVrms		
Xiii	Mechanical Endurance class		
Xiv	Type of Operating Mechanism		
Xv	Operating Motor details		
	-Type		
	-Rated Voltage		
	-Rated Current		
	-Rated Watts		
Xvi	Operating Time		
	-Closing -Opening		
xvii	Mechanical indication on drive shaft		
20	**Earthing Switch**		
i	Applicable standards		
ii	Type		
iii	Rate Short time withstand Current in kA, for3 sec		
iv	Rated peak short time Current, kAp		
v	Rated lightning impulse withstand voltage across the open gap, kVp		
vi	Rated Power Freq withstand voltage across the open gap, kVrms		
vii	Type of Operating Mechanism		
viii	Operating Motor details		
	-Type		
	-Rated Voltage		

Sr No	Particulars	To be Filled by BIDDER	
	-Rated Current		
	-Rated Watts		
ix	Operating Time		
	-Closing -Opening		
x	Mechanical indication on drive shaft		
21	**Current transformers**		
i	Type		
ii	Material		
iii	Position of Current Transformer		
iv	Reference Standard		
v	Rated Continuous thermal current		
vi	Rated Short Time current		
vii	Duration		
a	Feeder Bay CT		
i	Metering Core		
	-Ratio		
	-Output Burden		
	-Accuracy Class		
	-ISF		
ii	Protection Core -1		
	-Ratio		
	-Output Burden		
	-Minimum Knee Point Voltage at highestratio		
	-Maximum Excitation Current at Vk		
	-Accuracy Class		
	-Maximum Resistance at highest ratio		
	-ALF		
iii	Protection Core -2		
	-Ratio		
	-Output Burden		
	-Minimum Knee Point Voltage at highestratio		
	-Maximum Excitation Current at Vk		
	-Accuracy Class		
	-Maximum Resistance at highest ratio		
	-ALF		
a	**Transformer Bay CT**		
i	Metering Core		
	-Ratio		

Sr No	Particulars	To be Filled by BIDDER	
	-Output Burden		
	-Accuracy Class		
	-ISF		
ii	Protection Core -1		
	-Ratio		
	-Output Burden		
	-Minimum Knee Point Voltage at highestratio		
	-Maximum Excitation Current at Vk		
	-Accuracy Class		
	-Maximum Resistance at highest ratio		
	-ALF		
iii	Protection Core -2		
	-Ratio		
	-Output Burden		
	-Minimum Knee Point Voltage at highestratio		
	-Maximum Excitation Current at Vk		
	-Accuracy Class		
	-Maximum Resistance at highest ratio		
	-ALF		
22	**Local Control Cubical**		
i	Name of Manufacturer (OEM)		
ii	Location in module		
iii	Material		
iv	Sheet Thickness		
v	Degree of Protection		
vi	Padlocking arrangement		
vii	Major components of LCC		
	-Bay control mimic diagram		
	-Control Switches		
	-Indicating lamps		
	-Position indicators		
	-Annunciation scheme		
	-Auxiliary relays		
	-Contact multiplication relays		
	-System parameters display		
	-Heater with thermostat		
	-Interface terminal blocks for relaying &protection		

Sr No	Particulars	To be Filled by BIDDER	
viii	Bay Control Unit		
	-Make		
	-Type		
	-Applicable standard		
	-Local communication facility through HMI		
	-Local communication facility provided onfront side for PC		
	-IEC 61850 compatibility		
	-Compatibility with owner's SCADA forremote control		
	-Self monitoring		
	-Nos of Fiber Optic ports (2 x 10/100 baseFx)		
	-Nos of RS485 ports on rear side		
	-Event storage in event logger (nos)		
	-Disturbance records storage in DR (nos)		
	-Provision of analogue, digital & binary I/O asper scheme requirements.		
	-Substation & bay interlocks as per scheme		
	requirements		
	-System parameters measurements		
	-Trip Circuit Supervision of circuit breaker		
23	Hybrid**to Line connection**		
i	Nos of terminations(those can be terminated)		
ii	Type of termination required		
24	Hybrid**to Transformer connection**		
i	Nos of terminations(those can be terminated)		
ii	Type of termination required		
25	**Maintenance**		
i	Maximum down time for replacement orremoval of any part		
ii	Maximum down time for degassing andre-filling the biggest compartment		
iii	Time between two refilling of SF6 gas.		
iv	Recommended period for		

Sr No	Particulars	To be Filled by BIDDER	
	overhauling		
v	Operation and Maintenance manualattached		
vi	Nearest local service centre		
vii	Minimum time of availability of local service		
viii	Availability of spares at local service centre		
ix	List of recommended spares attached?		
x	List of recommended special tools, etcattached?	No	
xi	List of commission spares attached?	No	
xii	List of maintenance spares attached?	No	

	INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY VIGYAN PATH, PASCHIM BORAGAON, GUWAHATI – 781035.

PRICE BID DOCUMENT

FOR

36kV RMU unit

FOR 33/.433 kV SUBSTATION OF IASST, ASSAM

PaschimBoragaon,Guwahati-35.

1 Price Schedules

PREAMBLE

General

1. The Price Schedules are divided into separate Schedules as follows:

   Schedule No. 1: Plant& Equipment (including Mandatory Spare Parts)

   Schedule No. 2 Supervision & Erection Commissioning

2. If bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with tender documentprior to submitting their bid.

Pricing

3. Prices shall be filled in indelible ink, and any alterations necessary due to errors, etc., shall be initialed by the Bidder.

   As specified in the Bid Data Sheet and Conditions of Contract, prices shall be fixed and firm for the duration of the Contract.

4. Bid prices shall be quoted in the manner indicated in Schedule.

   As specified in the Bid Data Sheet and Conditions of Contract, **prices shall be fixed and firm** for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement.

   Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in the Bidding Document.

5. When requested by the Purchaser for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Purchaser may reasonably require, the Contractor shall provide the Purchaser with a breakdown of any composite or lump sum items included in the Schedules.

Schedule No. 1 – **Supply of Plants & Equipment, Mandatory Spare Parts**

(To be submitted in the Part-II, 'Price bid' in sealed envelope in quadruplicate)

Sl No	Item	Unit	Qty	Ex works/Unit	F&I/Unit	Total price including F&I	GST/Unit	Total tax	Total
1	2	3	4	5	6	7=4x(5+6)	8	9= 4X8	10=7+9
1.	**Supply of 36kV RMU with one incomer with load break switch and two numbers of 1.8 MVA transformer feeders as per technical specifications**	Set	1						
2.	**Installation and commission**								
TOTAL Column 7 and 9 to be carried forward to Schedule No. 3. Grand Summary									
Name of Bidder									
Signature of Bidder									
Seal									