INDIAN INSTITUTE OF TECHNOLOGY DELHI

HAUZ KHAS, NEW DELHI - 110016

NOTICE INVITING TENDER

NAME OF WORK	:	**Supplying, installation, testing and commissioning of PLC and SCADA system for Energy monitoring and control for various 11 kV substation, lifts and reservoirs at IIT Delhi.**
ESTIMATED COST	:	**Rs. 2,49,99,193.00**
EMD	:	**Rs. 4,99,984.00**
N.I.T. No.	:	**0933/37/IITD/EW/EE(ED-1)/2026-27**
Date of Opening	:	**24.09.2026**

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

Name of work: Supplying, installation, testing and commissioning of PLC and SCADA system for Energy monitoring and control for various 11 kV substation, lifts and reservoirs at IIT Delhi.

NIT for the above work has been prepared with the following:

1	Amount of NIT	:	Rs.2,49,99,193.00
2	Earnest money	:	Rs.4,99,984.00
3	Completion time	:	**06 Months**
4	Date and time of Pre-Bid Meeting	:	On 09.09.2026 at 14:00 Hrs. Venue: Central Library Committee Room
4	Last date of submission (on line)	:	23.09.2026 upto 15:00 Hrs.
5	Date of opening	:	24.09.2026 at 15:00 Hrs.
6	Date of Presentation	:	Shall be Intimated separately via e-mail to the Technically Qualified Bidders.
7	Form of NIT	:	IITD – 8
8	Schedule applicable	:	Market Rate, CPWD DSR-2025
9	Material stipulated	:	As per Schedule of Work
10	Chargeable head	:	New Construction/ Services/ Equipment/ 35.01.01
11	Estimate no.	:	IITD/DB/0933
12	Work code no.	:	2021/006/0933
13	NIT No.	:	0933/37/IITD/EW/EE(ED-1)/2026-27
14	Type of work	:	Works of upgradation/ Maintenance.

Certified that this NIT contains 1 to 89 pages.
NIT amounting to Rs. 2,49,99,193.00 is approved.

JE [E] AEE(E) Executive Engineer (ED-1)

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

INDIAN INSTITUTE OF TECHNOLOGY DELHI

HAUZ KHAS, NEW DELHI – 110016

NOTICE INVITING E-TENDER

IITD/WORKS (SP- 5391)/2026

Executive Engineer (ED-1), Indian Institute of Technology Delhi, Hauz Khas, New Delhi – 110016, Ph. No. 011-2654 8437 on behalf of Board of Governors invites online **QCBS Based Item Rate Tender** from enlisted contractors of appropriate class from CPWD, MES, BSNL, Railways, specialized agency, OEM or Authorized Agency from OEM dealing with manufacturing, installation, testing and commissioning of SCADA system including PLC / RTU etc. for the following work:

1	Name of work	:	**Supplying, installation, testing and commissioning of PLC and SCADA system for Energy monitoring and control for various 11 kV substation, lifts and reservoirs at IIT Delhi.**
2	NIT No.	:	**0933/37/IITD/EW/EE(ED-1)/2026-27**
3	Estimated Cost (Rs.)	:	**2,49,99,193.00**
4	Earnest Money Deposit (Rs.)	:	**4,99,984.00**
5	Security Deposit	:	**2.5% of Tendered Value**
6	Period of completion	:	**06 Months**
7	Last date & time of bid submission	:	**Upto 3 PM of 23.09.2026**
8	Performance Bank Guarantee	:	**5 percent of the tendered amount**

The bid forms and other details may be downloaded from Central Public Procurement Portal (http://eprocure.gov.in/eprocure/app). Aspiring bidders who have not enrolled / registered in e-procurement should enrol / register themselves before participating through web site http://eprocure.gov.in/eprocure/app. The portal enrolment is free of cost. Bidders are advised to go through instructions provided at "Instructions for online bid submission."

Bidders can access quotation / tender documents on the website (for searching in the NIC site), kindly go to quotation search option and type 'IIT'. Thereafter, click on "GO" button to view all IIT quotations. Select the appropriate quotation / tender and fill them with all relevant information and submit the completed Quotation / Tender document online on the website http://eprocure.gov.in/eprocure/app as per the schedule given in the next page.

No manual bids will be accepted. All bids (both Technical & Financial) should be submitted in the e-procurement portal.

Executive Engineer (ED-1)
For & on behalf of BOG, IIT Delhi

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

Ch. Head : New Construction/ Services/ Equipment/ (35.01.01)

Work Code : 2021/006/0933

Copy to:-
1. Junior Engineer
2. D.A. (Works Accounts)
3. D.R. (A/C)
4. A.R. (Store Purchase Section)
5. Notice Board
6. Website Administrator, IIT Delhi
7. Office copy

INDEX

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

SCHEDULE

1	Name of organisation	**:**	Indian Institute of Technology Delhi
2	Tender / Quotation type (open / limited / EOI / auction / single)	:	Open
3	Tender / Quotation category (services / goods / works)	**:**	Goods & Works
4	Type of Contract (work / supply / auction / service / buy / empanelment / sell)	**:**	Work
5	Form of contract (IITD – 7/8)	**:**	IITD – 8
6	Work Category (civil / electrical / fleet management / computer systems)	**:**	Electrical
7	Is multi-currency allowed?	**:**	No
8	Date of publishing / issue / start	**:**	02.09.2026 at 17.00 Hrs.
9	Document download start date	**:**	02.09.2026 at 17.00 Hrs.
10	Document download end date	**:**	23.09.2026 at 15.00 Hrs.
11	Date & time of pre-bid meeting	**:**	**Pre-bid meeting to be held on 09.09.2026 at 14:00 Hrs.**
12	Venue of pre-bid meeting	**:**	**Central Library Committee Room**.
13	Last date & time of uploading of bids	**:**	23.09.2026 at 15.00 Hrs.
14	Date & time of opening of Technical bids	**:**	24.09.2026 at 15.00 Hrs.
15	Tender fee	**:**	**NIL**
16	Earnest Money Deposit (EMD) Rs.	**:**	**4,99,984.00**
17	Mode of payment of EMD & Tender Fee	**:**	Can be paid through RTGS/NEFT. IIT Delhi Bank details are as under: Name of the Bank A/C : IITD Revenue Account SBI A/C No. 10773572622 Name of the Bank : State Bank of India, IIT Delhi, Hauz Khas, New Delhi-110016 IFSC Code : SBIN0001077 MICR Code 110002156 Swift No. : SBININBB547 (This is mandatory that UTR Number isprovided in the on-line quotation/bid. (Kindly refer to the UTR Column of the Declaration Sheet at Annexure-II) **OR** Demand Draft favouring **Registrar, IIT Delhi** Payable at SBI, IIT Delhi Branch. **Scanned copy of DD needs to be uploaded alongwith the Technical Bid.** Original DD shall have to be submitted to the tender inviting authority by the bidder as and when required after opening

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

			of bid.
17	Bid without EMD / Non-submission of original DD	:	To be considered as UNRESPONSIVE and bid shall summarily be rejected
18	No. of bids / covers (1 / 2 / 3 / 4)	:	**2**
19	Bid Validity days (180/120/90/60/30)	:	75 days (From last date of Submission of bid)
20	Address for communication	:	Executive Engineer (ED-1), Works Department, MZ-136, Main Building, IIT Delhi, Hauz Khas, New Delhi – 110016
21	Contact No.	:	011-26548437 / 011-26591463
22	e-mail address for communication	:	Eoa.Of.Electrical-I@admin.iitd.ac.in aashish@admin.iitd.ac.in

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

INSTRUCTIONS FOR ONLINE BID SUBMISSION

As per the directives of Department of Expenditure, this quotation / tender document has been published on the Central Public Procurement Portal (URL: http://eprocure.gov.in/eprocure/app). The bidders are required to submit softcopies of their bids electronically on the CPP portal, using valid Digital Signature Certificates (DSC). The instructions given below are meant to assist the bidders in registering on the CPP portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP portal.

More information useful for submitting online bids on the CPP portal may be obtained at http://eprocure.gov.in/eprocure/app

REGISTRATION

1. Bidders are required to enrol on the e-procurement module of the Central Public Procurement portal (URL: http://eprocure.gov.in/eprocure/app) by clicking on the link, “click here to enrol”. Enrolment on the CPP portal is free of charge.
2. As part of the enrolment process, the bidders will be required to choose a unique user name and assign a password for their accounts.
3. Bidders are advised to register their valid e-mail address and mobile number as part of the registration process. These would be used for any communication from the CPP Portal.
4. Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (class 2 or class 3 certificates with signing key usage) issued by any certifying authority recognised by CCA India (e.g. Sify / TCS / nCode / eMudhra etc.) with their profile.
5. Only one valid DSC should be registered by a bidder. Please note that bidders are responsible to ensure that they do not lend their DSCs to others which maylead to misuse.
6. Bidder then logs into the site through the secured log-in by entering their user ID / password and the password of the DSC / eToken.

SEARCHING FOR TENDER DOCUMENTS

1. There are various search options built in the CPP portal to facilitate bidders to search active tenders by several parameters. These parameters could include tender ID, organisation name, location, date, value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a

number of search parameters such as organisation name, form of contract, location, date, other keywords etc. to search for a tender published on the CPPportal.

2. Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. The tenders can bemoved to the respective "My Tenders" folder. This would enable the CPP portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.
3. The bidder should make a note of the unique Tender ID assigned to each other, in case they want to obtain any clarification / help from the Helpdesk.

PREPARATION OF BIDS

1. Bidder should take into account any corrigendum published on the tender document before submitting their bids.
2. Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bids. Please note the number of covers in which the bid documents have to be submitted. Any deviations from these may lead to rejection of the bids.
3. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF formats. Bid documents may be scanned with 100 dpi with black & white option.
4. To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor's certificates, etc.) has been provided to the bidders. Bidders can use "My Space" area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

SUBMISSION OF BIDS

1. Bidder should log into the site well in advance for bid submission so that h e /she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
2. The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
3. Bidder has to select the payment option as "on-line" to pay the tender fee / EMD as applicable and enter details of the instrument. Whenever, EMD / Tender fees is sought, bidders need to pay the tender fee and EMD separately on-line through RTGS (Refer to Schedule, Page no. 3)

4. A standard BOQ Format has been provided with the tender document to be filled by all the bidders. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. Bidders are required to download the BOQ file, open it and complete the white coloured [unprotected] cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it online, without changing the filename. If the BOQ file is found to be modified by the bidder, the bid will be rejected.

   OR

   In some cases financial bids can be submitted in PDF format as well (in lieu of BOQ).

5. The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this timeduring bid submission.
6. All the documents being submitted by the bidders would be encrypted usingPKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorised persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done.
7. The uploaded tender documents become readable only after the tender opening by the authorised bid openers.
8. Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
9. Kindly add scanned PDF of all relevant documents in a single PDF file of compliance sheet.

ASSISTANCE TO BIDDERS

1. Any queries relating to tender document and the terms and conditions contained therein should be addressed to the tender inviting authority for a tender or the relevant contact person indicated in the tender.
2. Any queries relating to the process of online bid submission or queries relating to CPP portal in general may be directed to the 24 x 7 CPP Portal Help Desk.The contact number of the helpdesk is 18002337315.

PRE-BID MEETING

a) In order to provide response to any doubt regarding NIT conditions, or to clarify issues, a pre-Bid meeting may be scheduled, as specified in the Data Sheet or published at e-Procurement Portal.

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

b) During the pre-Bid meeting, the clarification sought by representatives of prospective Bidders shall be responded appropriately. However, they shall be asked to submit their written request by close of office next day or by e-mail for electronic record thereof. The Client shall publish written response to such requests for clarifications, without identifying its source. In case required, amendment(s), in terms of ITB below shall be issued, which shall be binding on all prospective Bidders.

c) At any time prior to the deadline for submission of Bids, the IITD may, for any reason deemed fit, amend or modify the NIT by issuing Amendment(s)/corrigendum.

GENERAL INSTRUCTIONS TO THE BIDDERS

1. The tenders will be received online through portal https://eprocure.gov.in/eprocure/app. In the technical bids, the bidders are required to upload all the documents in PDF format.
2. Possession of a valid class II / III Digital Signature Certificate (DSC) in the form of smart card / e-token in the company's name is a prerequisite for registrationand participating in the bid submission activities through https://eprocure.gov.in/eprocure/app. Digital Signature Certificates can be obtained from the authorised certifying agencies, details of which are available in the website https://eprocure.gov.in/eprocure/app under the link "Information about DSC".
3. Tenderers are advised to follow the instructions provided in the "Instructions to the tenderer" for the e-submission of the bids online through the Central Public Procurement Portal for e-procurement at https://eprocure.gov.in/eprocure/app.

INFORMATION & INSTRUCTION TO BIDDERS FOR E-TENDERING

Executive Engineer (ED-1), Indian Institute of Technology Delhi, Hauz Khas, New Delhi – 110016, Ph. No. 011-2654 8437 on behalf of Board of Governors invites **QCBS Based Item Rate Tender** from enlisted contractors of appropriate class from CPWD, MES, BSNL, Railways, specialized agency, OEM or Authorized Agency from OEM dealing with manufacturing, installation, testing and commissioning of SCADA system including PLC / RTU etc. for the following work.

Sr. No.	NIT No.	Name of Work & Location	Estimated cost put to bid (Rs.)	Earnest money (Rs.)	Tender Fee (Rs.)	Period of completion	Last date & time of submission of bid	Time & date of opening of Technical Bid	Time & date of opening of Financial Bid
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	0933/37/IITD/EW/EE(ED-1) /2026-27	**Supplying, installation, testing and commissioning of PLC and SCADA system for Energy monitoring and control for various 11 kV substation, lifts and reservoirs at IIT Delhi.**	2,49,99,193.0	4,99,984.00	NIL	06 Months	Upto 3 PM of 23.09.2026	24.09.2026 at 15 PM	To be decided after assessing Technical Bids

1. The successful bidder shall be required to submit a performance guarantee of 5% of the tendered amount in the form of Bank Guarantee or F.D.R. from a Nationalized / Scheduled Bank within fifteen days of issue of letter of intent before award of work. In case of failure by the Contractor to submit the performance guarantee within the specified period, full earnest money will be forfeited by the Institute, and the tender shall be treated as null and void. EMD shall be refunded after submission of PBG. **The performance guarantee shall be initially valid up to the stipulated date of completion (i.e. 60 days) plus sixty days beyond that.**

2. Contractors who fulfil the following requirements shall be eligible to apply. Joint ventures are not accepted.

a. Should have satisfactorily completed the works as mentioned below during the last Seven years ending **previous day of last date of submission of bids.**

i. **Three** similar works each costing not less than **Rs.1,00,00,000.00**, or **two** similar works each costing not less than **Rs.1,50,00,000.00**, or one similar work costing not less than **Rs.2,00,00,000.00** (all figures rounded to nearest thousand)

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

3. **Earnest money (**EMD) shall have to be deposited / submitted as stipulated in the schedule.

4. The value of executed work shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum; calculated from the date of completion to last date of submission of financial bid.

5. **Similar work means** Supply, installation, testing and commissioning of Substation works Including PLC Automation/ PLC based SCADA system for Substation.

6. **Tender Specific, Bid Specific Authorization Letter / Certificate from the Manufacturer of PLC and SCADA software System as per the prescribed Performa Attached at Annexure -II.**

7. **Work means work under Government/ Central Public Sector Undertaking / State Public Sector** Under Central Autonomous bodies/ State Autonomous bodies/ City Development Authority/ Municipal Cooperation of City formed under any act by Central/ State Government and published in Central/ State Gazetteer.

8. Completion certificates are required to be got issued by an officer not below the rank of Executive Engineer of similar works completed by the Firm. The work experience certificates submitted by the bidders shall clearly indicate that:

   a. The similar work executed shall be **as per '5' above**

   b. The completed cost of the work

   c. Actual date of completion of the work

9. IITD is committed to follow the principle of transparency, equity and competitiveness in public procurement. Before submission of bid, **each bidder should sign integrity pact at respective places** and submit the bid. **If duly signed integrity pact is not submitted by bidder, such bidshall not be considered.**

10. **The intending bidder must read the terms and conditions [both commercial & Additional] & IITD - 6 carefully** which will be the part of the Contract. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.

11. Information and Instructions for bidders posted on website shall form part of bid document.

12. The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website e-procure.gov.in free of cost.

13. But the bid can only be submitted after submission of EMD as prescribed in the schedule.

14. Copy of all mandatory documents as desired in the NIT shall be scanned and up-loaded to the e-Tendering website within the period of bid submission. However, certified / original copy of all the scanned and up-loaded documents shall have to be submitted by the lowest bidder only within a week physically in the office of e-tendering authority. During scrutiny of technical bids, if required, bidders may be asked to submit original documents for cross checking.

15. Online bid documents submitted by intending bidders shall be opened only of those bidders, who has submitted prescribed EMD and other documents scanned and uploaded are found in order.

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

16. Those contractors not registered on the website mentioned above, are required to get registered beforehand. Bidders should refer "Instruction for Online Bid Submission" given earlier for further assistance

17. When bids are invited in two / three stages systems and if it is desired to submit revised financial bid it shall be mandatory to submit revised financial bid. If not submitted, then the bid submitted earlier shall become invalid

18. The department reserves the right to reject any prospective application without assigning any reason and to restrict the list of qualified contractors to any number deemed suitable by it, if too many bids are received satisfying the laid down criterion

19. Contractors must ensure to quote rate of each item

20. The bid submitted shall become invalid if:

a. The bidder is found ineligible.

b. The bidder does not upload all the documents (including GSTIN registration) as stipulated inthe bid document including the undertaking / declaration if any.

c. EMD not deposited as specified

d. Not registered with EPFO & ESIC

21. The bidder shall upload following document / information in support of technical eligibility (Part No.–II technical bid).

a. Duly signed and stamped copy of bid document, downloaded from e-tender portal.

b. Copy of BIS certificate from manufacturer of PLC.

c. Copy of ISO: 9001:2015 certification of PLC system Manufacturer.

d. Copy of ISO: 14001:2015 certification of PLC system Manufacturer.

e. Copy of ISO: 45001:2018 certification of PLC system Manufacturer.

f. Copy of BIS certificate from manufacturer of SCADA System.

g. Copy of ISO: 9001:2015 certification of SCADA system Manufacturer.

h. Copy of ISO: 45001:2018 certification of SCADA system Manufacturer.

i. Copy of ISO: 14001:2015 certification of SCADA system Manufacturer.

j. Duly filled Guaranteed Technical Particulars, Performa of GTP as appears in the technical specification for SCADA System, PLC any other equipment / item GTP as required by the Engineer-in-Charge.

k. The OEM shall further certify that all the bought-out items have been tested, approved and integrated as part of the complete system, and that their use shall not affect the safety, reliability, performance, warranty or maintainability of the installation. Copies of the OEM certification along with relevant Type test certificates, compliance certificates and product data sheet reports for PLC and SCADA System shall be submitted for EIC for approval prior to the installation.

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

List of Mandatory Documents to be scanned and uploaded within the period of bid submission:

1. Annexure – 1 duly filled in and got signed.
2. Annexure – X-1, X-2, C-1, C-2 duly complied and got signed (on OEM Letter Head).
3. Enlistment certificate of composite category. (Not required for specialized agency).
4. Proof of EMD deposit / Scanned copy of DD submission (favouring 'Registrar, IIT Delhi')

   The following undertaking on firm's letter head shall be uploaded by the bidder I scanned copy of DD/FDR is uploaded by the bidder: "The exact physical EMD (as uploaded) shall be deposited by me / us with the authority inviting tender, in case I/we become the lowest tenderer, within a week of the opening of financial bid, otherwise, IITD may reject the tender and also take actions to debar me/ us from tendering in any form in IIT Delhi".

5. **The Authorization Certificate form the OEM shall be Bid specific, Tender Specific Authorization Certificate on the Letter Head of OEM, to be uploaded during the online submission of Bid.**

   5.1. **Along with the Authorization Certificate by the OEM, the OEM shall also submit undertaking for the complete system which is to be uploaded along with the bids.**

   "I / We_____ certify that all the bought-out items have been tested, approved and integrated as part of the complete system, and that their use shall not affect the safety, reliability, performance, warranty or maintainability of the installation."

6. Certificate of work experience as desired (vide clause 5 above) with BOQ.
7. Certificate of GST Registration of the State in which the work is to be taken up, if already obtained by the bidder. If the bidder has not obtained GST registration in the State in which the work is to be taken up, or as required by GST authorities, then in such a case the bidder shall scan and upload following undertaking along with other bid documents.

   "if work is awarded to me, I/we shall obtain GST registration certificate of the State, in which work is to be taken up within one month from the date of receipt of award letter or before release of any payment by IIT Delhi, whichever is earlier, failing which I/we shall be responsible for any delay in payments which will be due towards me/us on a/c of the work executed and/or for any action taken by IIT Delhi or GST department in this regard."

8. Affidavit as per provision of the clause 1.2.2 of IITD-6 [To be submitted on stamp paper and date of affidavit and purchase of stamp paper shall not be earlier than the publication of NIT. NIT number, name of work shall invariably be written on the **1st page** of the Affidavit.]
9. Acceptance to execute INTEGRITY PACT [see integrity pact]
10. **OEM or Authorized dealer cannot participate in the tender simultaneously, if found both the bids of OEM and authorized dealer shall be summarily rejected and no communication shall be entertained in this regard.**
11. Valid Electrical License in the name of the contractor (Not required for OEM).
12. IITD 7 / 8 duly signed
13. Any other document as specified in the NIT

Executive Engineer [ED-1]
For & on Behalf of BOG, IIT Delhi

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

IITD – 6

INDIAN INSTITUTE OF TECHNOLOGY DELHI

NOTICE INVITING E-TENDER

13.1. **QCBS Based Item Rate Tender** are invited on behalf of The Board of Governors, IIT Delhi, Hauz Khas, New Delhi - 110016 invites online from enlisted contractors of appropriate class from CPWD, MES, BSNL, Railways, specialized agency, OEM or Authorized Agency from OEM dealing with manufacturing, installation, testing and commissioning of SCADA system including PLC / RTU etc. for the following work for the work of **Supplying, installation, testing and commissioning of PLC and SCADA system for Energy monitoring and control for various 11 kV substation, lifts and reservoirs at IIT Delhi..**

13.2. The work is estimated to cost Rs.**2,49,99,193.00.** This estimate, however, is given merely as a rough guide.

13.2.1. The authority competent to approve NIT for the combined cost and belonging to the major discipline will consolidate NITs for calling the bids. He will also nominate Division which willdeal with all matters relating to the invitation of bids.

13.3. Intending bidder is eligible to submit the bid provided he has definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, ofhaving satisfactorily completed similar works of magnitude specified below:-

13.3.1. **Criteria of eligibility for submission of bid documents: Conditions for intending bidders / contractors**

13.3.1.1. **Three** similar works each costing not less than **Rs.1,00,00,000.00**, or **two** similar works each costing not less than **Rs.1,50,00,000.00**, or one similar work costing not less than **Rs.2,00,00,000.00** in last 7 years ending previous day of last date of submission of bids. The value of executed work shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum; calculated from the date of completion to last date of submission of financial bid.

13.3.2. **To become eligible for issue of bid, the bidders shall have to furnish an affidavit as under: -** *"I / We undertake and confirm that eligible similar works(s) has/have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I / we shall be debarred for bidding in IIT Delhi in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee (Scanned copy to be uploaded at the time of submission of bid)"*

2.0 Agreement shall be drawn with the successful bidders on prescribed Form No. IITD 7/8 which is available as IIT Delhi Publication. Bidders shall quote their rates as per various terms and conditions of the said form which will form part of the agreement.

3.0 The time allowed for carrying out the work will be **06 Months** from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later,in accordance with the phasing, if any, indicated in the bid documents.

4.0 The site for the work is available.

5.0 The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract Form can be seen from the web Site **e-procure.gov.in.**

6.0 After submission of the bid the contractor can re-submit revised bid any number of times but before last time and date of submission of tender as notified.

7.0 While submitting the revised bid, contractor can revise the rate of one or more item(s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of tender as notified.

8.0 If it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the tender submitted earlier shall become invalid.

9.0 EMD shall have to be deposited / submitted as stipulated in the schedule of the NIT.

9.1 Copy of all 'mandatory documents' and other documents as specified in the press notice shall be scanned and uploaded to the e-tendering website within the period of bid submission. ***However, certified copy of all the scanned and uploaded documents as specified in press notice shall have to be submitted by the lowest bidder only within a week physically in the office of tender opening authority.***

10.0 The bid submitted shall become invalid, if:

10.1 The bidder is found ineligible.

10.2 The bidder does not upload all the documents (including GSTIN Registration) as stipulated in the bid document**.**

10.3 EMD & Proper Affidavit not submitted as specified

10.4 If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted ***physically by the lowest bidder*** in the office of the bid opening authority.

11.0 The contractor whose bid is accepted will be required to furnish **performance guarantee of 5% (Five Percent)** of the bid amount within the period specified in Schedule F. This guarantee shall be in the form of Deposit at Call receipt of any scheduled bank / Banker' cheque of any scheduled bank/ Demand Draft of any scheduled bank/Pay order of any Scheduled Bank (in case guarantee amount is less than Rs.1,00,000/-) or Government Securities or Fixed Deposit Receipts or irrevocable Bank Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F' including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to thecontractor.

12.0 Intending Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and subsoil (so far as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A bidder shall be deemed to have full knowledge of the site whether he

inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidder implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

13.0 The competent authority on behalf of the Board of Governors does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bids in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidder shall be summarily rejected.

14.0 Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the bids submitted by the contractors who resort to canvassing will be liable for rejection.

15.0 The competent authority on behalf of the Board of Governors reserves to himself the right of accepting the whole or any part of the bid and the bidder shall be bound to perform the same at the rate quoted.

16.0 The contractor shall not be permitted to bid for works in the IITD responsible for award and execution of contracts, in which his near relative is posted a Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive). He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any Gazetted officer in the IIT Delhi. Any breach of this condition by the contractor would render him liable to be debarred from bidding process in future in IIT Delhi.

17.0 No Engineer of Gazetted rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the prior permission of the Government of India in writing. This contract liable to be cancelled, if, either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the bid or engagement in the contractor's service.

18.0 The bid for the works shall remain open for acceptance for a period of **seventy five days from the date of opening of financial bids**, if any bidder withdraws his bid before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the bid which are not acceptable to the department, then the IIT Delhi shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the bidder shall not be allowed to participate in the re-bidding process of the work.

19.0 This notice inviting bid shall form a part of the contract document. The successful bidder / contractor, on acceptance of his bid by the Accepting Authority shall **within fifteen days** from the stipulated date of start of the work, sign the contract consisting of:-

19.1 The Notice Inviting Bid, all the documents including additional conditions, specifications and drawings, if any, forming part of the bid as uploaded at the time of invitation of bid and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.

19.2 Standard IITD Form –7/8 or other Standard IITD Form as applicable.

20.0 In case any discrepancy is noticed between the documents as uploaded at the time of submission of the bid online and hard copies as to be submitted physically in IIT Delhi, if so desired by the accepting authority, then the bid submitted shall become invalid and the IIT Delhi shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the bidder shall not be allowed to participate in the bidding process of the work.

21.0 GST or any other tax applicable in respect of inputs procured by the contractor for this contract shall be payable by the Contractor and Government will not entertain any claim whatsoever in respect of the same. However, component of GST at time of supply of service (as provided in CGST Act 2017) provided by the contract shall be varied if differentfrom that applicable on the last date of receipt of tender including extension if any.

INTEGRITY PACT

To

……..,

……..,
……..

Sub: NIT No. **0933/37/IITD/EW/EE(ED-1)/2026-27** for the work of **"Supplying, installation, testing and commissioning of PLC and SCADA system for Energy monitoring and control for various 11 kV substation, lifts and reservoirs at IIT Delhi.."**

Dear Sir,

It is hereby declared that IIT Delhi (IITD) is committed to follow the principle of transparency, equity and competitiveness in public procurement.

The subject Notice Inviting Tender (NIT) is an invitation to offer made on the condition that the Bidder will sign the Integrity Agreement, which is an integral part of the tender/bid documents, failing which the tender/bidder will stand disqualified from the tendering process and the bid of the bidder would be summarily rejected.

This declaration shall form part and parcel of the Integrity Agreement and signing of the same shall be deemed as acceptance and signing of the Integrity Agreement on behalf of the IITD.

Yours faithfully,

Executive Engineer (ED-1)

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

[TO BE SUBMITTED DULY SIGNED BY THE BIDDER ALONGWITH BID DOCUMENTS]

To

Executive Engineer (ED-I),
IIT Delhi, Hauz Khas,
New Delhi – 110016

Subject: Submission of Bid for the work of **"Supplying, installation, testing and commissioning of PLC and SCADA system for Energy monitoring and control for various 11 kV substation, lifts and reservoirs at IIT Delhi."**

Dear Sir,

I / We acknowledge that IIT Delhi is committed to follow the principles thereof as enumerated in the Integrity Agreement enclosed with the tender/bid document.

I / We agree that the Notice Inviting Tender (NIT) is an invitation to offer made on the condition that I / We will sign the enclosed integrity Agreement, which is an integral part of tender / bid documents, failing which I / We will stand disqualified from the tendering process. I / We acknowledge that THE MAKING OF THE BID SHALL BE REGARDED AS AN UNCONDITIONAL AND ABSOLUTE ACCEPTANCE of this condition of the NIT.

I / We confirm acceptance and compliance with the Integrity Agreement in letter and spirit and further agree that execution of the said Integrity Agreement shall be separate and distinct from the main contract, which will come into existence when tender/bid is finally accepted by IITD. I / We acknowledge and accept the duration of the Integrity Agreement, which shall be in the line with Article 1 of the enclosed Integrity Agreement.

I / We acknowledge that in the event of my/our failure to sign and accept the Integrity Agreement, while submitting the tender/bid, IITD shall have unqualified, absolute and unfetteredright to disqualify the tenderer /bidder and reject the tender/bid is accordance with terms and conditions of the tender/bid.

Yours faithfully,

(Duly signed by authorized signatory of the Bidder)

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

[To be signed by the bidder and same signatory competent / authorized to sign the relevant contract on behalf of IITD]

INTEGRITY AGREEMENT

This Integrity Agreement is made at ..... on this ..... day of..... 20.....

BETWEEN

The Board of Governors, IIT Delhi, Hauz Khas, New Delhi - 16 represented through **Executive Engineer (ED-I)**, IIT Delhi
....., (Hereinafter referred as the '**Principal/Owner**',
(Address of Division)
'**Principal/Owner**', which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

AND

.....
.....
(Name and Address of the Individual/firm/Company)
Through.....
..... (Hereinafter referred
(Details of duly authorized signatory)
to as the "**Bidder/Contractor**" and which expression shall unless repugnant to the meaning or context hereof include its successors and permitted assigns)

PREAMBLE

WHEREAS the Principal / Owner has floated the Tender (NIT No. **0933/37/IITD/EW/EE(ED-1)/2026-27**) (hereinafter referred to as "**Tender/Bid**") and intends to award, under laid down organizational procedure, contract for **"Supplying, installation, testing and commissioning of PLC and SCADA system for Energy monitoring and control for various 11 kV substation, lifts and reservoirs at IIT Delhi.."** (Name of work) hereinafter referred to as the "**Contract**".

AND WHEREAS the Principal/Owner values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relation with its Bidder(s) and Contractor(s) AND WHEREAS to meet the purpose aforesaid both the parties have agreed to enter into this Integrity Agreement (hereinafter referred to as "**Integrity Pact**" or **"Pact**"), the termsand conditions of which shall also be read as integral part and parcel of the Tender/Bid documents and Contract between the parties.

NOW, THEREFORE, in consideration of mutual covenants contained in this Pact, the parties hereby agree as follows and this Pact witnesses as under:

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

ARTICLE 1: COMMITMENT OF THE PRINCIPAL / OWNER

1. The Principal/Owner commits itself to take all measures necessary to prevent corruption and to observe the following principles:
   - **1.1.** No employee of the Principal / Owner, personally or through any of his / her family members, will in connection with the Tender, or the execution of the Contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person isnot legally entitled to.
     - **1.1.1.** The Principal/Owner will, during the Tender process, treat all Bidder(s) with equity and reason. The Principal/Owner will, in particular, before and during the Tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the Tender process or the Contract execution.
     - **1.1.2.** The Principal/Owner shall Endeavour to exclude from the Tender process any person, whose conduct in the past has been of biased nature.
2. If the Principal/Owner obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal code (IPC)/Prevention of Corruption Act, 1988 (PoC Act) or is in violation of the principles herein mentioned or if there be a substantive suspicion in this regard, the Principal/Owner will inform the Chief Vigilance Officer and in addition can also initiate disciplinary actions as per its internal laid down policies and procedures.

ARTICLE 2: COMMITMENT OF THE BIDDER(S) / CONTRACTOR(S)

1. It is required that each Bidder/Contractor (including their respective officers, employees and agents) adhere to the highest ethical standards, and report to the Government / Department all suspected acts of **fraud or corruption or coercion or collusion** of which it has knowledge or becomes aware, during the tendering process and throughout the negotiation or award of a contract.
2. The Bidder(s)/Contractor(s) commits himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the Tender process and during the Contract execution:
   - **2.1.** The Bidder(s)/Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal/Owner's employees involved in the Tender process or execution of the Contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the Tender process or during the execution of the Contract.
   - **2.2.** The Bidder(s)/Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices,specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to cartelize in the bidding process.
   - **2.3.** The Bidder(s) / Contractor(s) will not commit any offence under the relevant IPC/PoC Act. Further the Bidder(s) / Contractor(s) will not use improperly, (for the purpose of competition or personal gain), or pass on to others, any information or documents provided by the Principal / Owner as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
   - **2.4.** The Bidder(s) / Contractor(s) of foreign origin shall disclose the names and addresses of agents / representatives in India, if any. Similarly Bidder(s) / Contractor(s) of Indian

Nationality shall disclose names and addresses of foreign agents/representatives, if any. Either the Indian agent on behalf of the foreign principal or the foreign principal directly could bid in a tender but not both. Further, in cases where an agent participate in a tender on behalfof one manufacturer, he shall not be allowed to quote on behalf of another manufacturer along with the first manufacturer in a subsequent/parallel tender for the same item.

2.5. The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediariesin connection with the award of the Contract.

3. The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

4. The Bidder(s)/Contractor(s) will not, directly or through any other person or firm indulge in fraudulent practices **means a wilful misrepresentation or omission of facts or submission of fake/forged documents in order to induce public official to act in reliance thereof, with the purpose of obtaining unjust advantage by or causing damage to justified interest of others and/or to influence the procurement process to the detriment of the Government interests**.

5. The Bidder(s)/Contractor(s) will not, directly or through any other person or firm use Coercive Practices (means the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force directly or indirectly, where potential or actual injury may befall upon a person, his/ her reputation or property to influence their participation in the tendering process).

ARTICLE 3: CONSEQUENCES OF BREACH

Without prejudice to any rights that may be available to the Principal / Owner under law or the Contract or its established policies and laid down procedures, the Principal/Owner shall have the following rights in case of breach of this Integrity Pact by the Bidder(s)/Contractor(s) and the Bidder/ Contractor accepts and undertakes to respect and uphold the Principal/Owner's absolute right:

1. If the Bidder(s)/Contractor(s), either before award or during execution of Contract has committed a transgression through a violation of Article 2 above or in any other form, such as to put his reliability or credibility in question, the Principal/Owner after giving 14 days' notice to the contractor shall have powers to disqualify the Bidder(s)/Contractor(s) from the Tender process or terminate/determine the Contract, if already executed or exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the Principal/Owner. **Such exclusion may be forever or for a limited period as decided by the Principal/Owner**.

2. **Forfeiture of EMD/Performance Guarantee/Security Deposit**: If the Principal/Owner has disqualified the Bidder(s) from the Tender process prior to the award of the Contract or terminated/determined the Contract or has accrued the right to terminate/determine the Contract according to Article 3(1), the Principal/Owner apart from exercising any legal rights that may have accrued to the Principal/Owner, may in its considered opinion forfeit the entire amount of Earnest Money Deposit, Performance Guarantee and Security Deposit of the Bidder/Contractor.

3. **Criminal Liability**: If the Principal/Owner obtains knowledge of conduct a Bidder or Contractor, or of an employee or a representative or an associate of a Bidder or Contractor which constitutes corruption within the meaning of IPC Act, or if the Principal / Owner has substantive suspicion in this regard, the Principal/Owner will inform the same to law enforcing agencies for further investigation.

ARTICLE 4: PREVIOUS TRANSGRESSION

1. The Bidder declares that no previous transgressions occurred in the last 5 years with any other Company in any country confirming to the anticorruption approach or with Central Government or State Government or any other Central/State Public Sector Enterprises in India that could justify his exclusion from the Tender process.
2. If the Bidder makes incorrect statement on this subject, he can be disqualified from the Tender process or action can be taken for banning of business dealings/ holiday listing of the Bidder/Contractor as deemed fit by the Principal/ Owner.
3. If the Bidder/Contractor can prove that he has resorted / recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal/Owner may, at its own discretion, revoke the exclusion prematurely.

ARTICLE 5: EQUAL TREATMENT OF ALL BIDDERS/CONTRACTORS/SUBCONTRACTORS

1. The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact. The Bidder/Contractor shall be responsible for any violation(s) of the principles laid down in this agreement/Pact by any of its Sub-contractors/sub-vendors.
2. The Principal/Owner will enter into Pacts on identical terms as this one with all Bidders and Contractors.
3. The Principal/Owner will disqualify Bidders, who do not submit, the duly signed Pact between the Principal/Owner and the bidder, along with the Tender or violate its provisions at any stage of the Tender process, from the Tender process.

ARTICLE 6: DURATION OF THE PACT

1. This Pact begins when both the parties have legally signed it. It expires for the Contractor/Vendor 6 months after the completion of work under the contract or till the continuation of defect liability period, whichever is more and for all other bidders, till the Contract has been awarded.
2. If any claim is made/lodged during the time, the same shall be binding and continue to be valid despite the lapse of this Pacts as specified above, unless it is discharged/determined by the Competent Authority of IIT Delhi.

ARTICLE 7: OTHER PROVISIONS

1. This Pact is subject to Indian Law, place of performance and jurisdiction is the Head Quarters of the Division of the Principal/Owner, who has floated the Tender.
2. Changes and supplements need to be made in writing. Side agreements have not been made.
3. If the Contractor is a partnership or a consortium, this Pact must be signed by all the partners or by one or more partner holding power of attorney signed by all partners and consortium members. In case of a Company, the Pact must be signed by a representative duly authorized by Board Resolution.
4. Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intensions.
5. It is agreed term and condition that any dispute or difference arising between the parties with regard to the terms of this Integrity Agreement / Pact, any action taken by the Owner/Principal in accordance with this Integrity Agreement/ Pact or interpretation thereof shall not be subject to

arbitration.

ARTICLE 8: LEGAL AND PRIOR RIGHTS

1. All rights and remedies of the parties hereto shall be in addition to all the other legal rights and remedies belonging to such parties under the Contract and/or law and the same shall be deemed to be cumulative and not alternative to such legal rights and remedies aforesaid. For the sake of brevity, both the Parties agree that this Integrity Pact will have precedence over the Tender/Contact documents with regard any of the provisions covered under this Integrity Pact.

IN WITNESS WHEREOF the parties have signed and executed this Integrity Pact at the place and date first above mentioned in the presence of following witnesses:

.....
(For and on behalf of Principal / Owner)

.....
(For and on behalf of Bidder / Contractor)

WITNESSES:

1. .....

(signature, name and address)

2. .....
(signature, name and address)

Place:

Dated :

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

IITD - 7/8

INDIAN INSTITUTE OF TECHNOLOGY DELHI

HAUZ KHAS, NEW DELHI - 110016

Percentage Rate Tender / Percentage Rate Tender & Contract for Works

Tender for the work of **"Supplying, installation, testing and commissioning of PLC and SCADA system for Energy monitoring and control for various 11 kV substation, lifts and reservoirs at IIT Delhi."**

1. To be submitted online by **Upto 3 PM of 23.09.2026**
2. To be opened on **24.09.2026 at 3 PM** online

e-TENDER

I / We have read and examined the Notice Inviting Tender, schedule, A, B, C, D, E & F, Specifications applicable, Drawings & Designs, General Rules and Directions, Conditions of Contract, Clauses of Contract, Special conditions, Schedule of Rate & other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.

I / We hereby tender for the execution of the work specified for the Board of Governors, IIT Delhi within the time specified in Schedule 'F' viz., schedule of quantities and in accordance in all respect with the specifications, designs, drawing and instructions in writing referred to in Rule-1 of General Rules and Directions and in Clause 11 of the Conditions of contract and with such materials as are provided for, by, and in respect of accordance with, such conditions so far as applicable.

We agree to keep the tender open for seventy-five (75) days from the due date of its opening / seventy-five days from the date of submission of bid in case tenders are invited on 2/3 envelop system (**strike out as the case may be**) and not to make any modification in its terms and conditions.

A sum of **Rs. 4,99,984.00** is hereby deposited in IIT Delhi Revenue Account No. 10773572622 as earnest money / **A Demand Draft of Rs. 4,99,984.00** favouring Registrar, IIT Delhi has been scanned and uploaded with the Technical Bid. If I / We, fail to furnish the prescribed performance guarantee within prescribed period I / We agree that the said The Board of Governors, IIT Delhi, Hauz Khas, New Delhi - 16 or his successors, in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if I / We fail to commence the work as specified, I / We agree that The Board of Governors, IIT Delhi, Hauz Khas, New Delhi - 16 or the successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely, otherwise the said earnest money shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to those in excess of that limit at the rates to be determined in accordance with the provision contained inClause 12.2 and 12.3 of the tender form. Further, I / We agree that in case of forfeiture of Earnest Money & Performance Guarantee as aforesaid I / We shall be debarred for participation in the re- tendering process of the work.

I / We undertake and confirm that eligible similar work(s) has/have not been got executed

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I / We shall be debarred for tendering in IIT Delhi in future forever. Also, if sucha violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee.

I / We hereby declare that I / We shall treat the tender documents drawings and other records connected with the work as secret/confidential documents and shall not communicate information/derived there from to any person other than a person to whom I / We am/are authorized to communicate the same or use the information in any manner prejudicial to the safety of the State.

Dated:

Signature of Contractor

Witness:

Postal Address

Address:

Occupation:

ACCEPTANCE

The above tender (as modified by you as provided in the letters mentioned hereunder) is accepted by me for an on behalf of The Board of Governors, IIT Delhi, Hauz Khas, New Delhi - 110016 for a sum of (Rupees….....).

The letters referred to below shall form part of this contract agreement:-

(a)

(b)

(c)

For & on behalf of Board of Governors, IIT Delhi

Signature ……..

Dated: Designation …….

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

PROFORMA OF SCHEDULES

SCHEDULE "A"

Schedule of Quantities (enclosed)

SCHEDULE "D"

Extra schedule for specific requirements / documents for the work, if any.

NIL

SCHEDULE "E"

Reference to General Conditions of Contract:

1	Reference to General Conditions of Contract	:	GCC for Maintenance work 2023 for CPWD works along with correction on slips/amendments issued upto last date of submission of bid.
2	Name of work	:	**Supplying, installation, testing and commissioning of PLC and SCADA system for Energy monitoring and control for various 11 kV substation, lifts and reservoirs at IIT Delhi..**
3	Estimated cost of work (Rs.)	**:**	2,49,99,193.00
4	Earnest Money (Rs.)	**:**	4,99,984.00
5	Performance Guarantee	**:**	5 percent of tendered value
6	Security Deposit	**:**	2.5 percent of tendered value

SCHEDULE "F"

GENERAL RULES & DIRECTIONS:

Officer inviting tender	**:**	Executive Engineer (Electrical)
Maximum percentage for quantity of items ofwork to be executed beyond which rates are to be determined in accordance with Clauses 12.2 & 12.3	**:**	**See Clause 12 below**

DEFINITIONS:

2 (V)	Engineer-in-charge	**:**	Executive Engineer (Electrical)
2 (viii)	Accepting authority	**:**	PFC
2 (x)	Percentage on cost of materials and labour to cover all overheads and profits	**:**	15 percent
2 (xi)	Standard Schedule of Rates	**:**	Market Rates, DSR-2025 for Electrical Works

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

			with corrected up to date of submission of bid.
2 (xii)	Department	:	Estate & Works, IIT Delhi
9 (ii)	Standard IITD Contract Form	:	PWD / IITD Form 7 / 8 as modified and corrected upto date, GCC 2023 for Maintenance work of CPWD with latest modifications.

CLAUSE 1

i)	Time allowed for submission of Performance Guarantee from the date of issue of letter of acceptance	:	15 days
ii)	Maximum allowable extension beyond the period provided in (i) above with late fees @0.1% per day of performance guarantee	:	10 days

CLAUSE 2

(i)	Authority for fixing compensation under Clause 2	:	Executive Engineer (Electrical)

CLAUSE 2A

(i)	Whether Clause 2A shall be applicable	:	No

CLAUSE 5

(i)	Number of days from the date of issue of letter of acceptance for reckoning date of start	:	10 days

TABLE OF MILE STONE(S):

Sr. No.	Description of Milestone (physical)	Time allowed in days (from date of start)	Amount to be with-held in case of non-achievement of milestone
(1)	(2)	(3)	(4)
	--- NOT SPECIFIED ----		

Time allowed for execution of work	:	06 Months

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

Authority to decide:	**Extension of time**	:	Executive Engineer (ED-1)
	Rescheduling of milestones	:	Executive Engineer (ED-1)
	Shifting of date of start in case of delay in handling over of site.	:	Executive Engineer (ED-1)

CLAUSE 5

Clause applicable 5 / 5A	:	5

CLAUSE 6

MB applicable: Computerized Measurement Book (CMB) / Electronic Measurement Book (EMB)	:	CMB

CLAUSE 7

Gross work to be done together with net payment / adjustment of advances for materials collected, if any, since the last such payment for being eligible to interim payment	:	41 Lakhs

CLAUSE 7A

Whether clause 7A shall be applicable	:	No

CLAUSE 10A

List of testing equipment to be provided by the contractor at site lab					
1	**NIL**	**2**	**NIL**	**3**	**NIL**
4	**NIL**	**5**	**NIL**	**6**	**NIL**

CLAUSE 10B (ii)

Whether Clause 10 B (ii) shall be applicable (Yes / No)	:	No

CLAUSE 10 C

Component of labour expressed as percent of value of work	:	15 Percent

CLAUSE 10CC (Not Applicable)

Whether Clause 10 CC shall be applicable (Yes / No)	:	Not applicable

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

CLAUSE 11

Specification to be followed for execution of work	:	**Part-IV Sub Station 2013**, CPWD Specification 2023 **for Electrical works corrected slips & manufacturers Specifications upto the last date of bid submission/uploading of tender.** **Detailed nomenclature of items& specifications for market rate items as per Engineer-in-charge**

CLAUSE 12

12.2	Deviation limit beyond which clauses 12.2 & 12.3 shall apply for building work / Upgradation for providing and fixing E.I work	:	100%

CLAUSE 16

Competent authority for deciding reduced rates	:	Institute Engineer

CLAUSE 18

List of mandatory machinery, tools & plants to be deployed by the contractor at site					
1	**NIL**	**2**	**NIL**	**3**	**NIL**
4	**NIL**	**5**	**NIL**	**6**	**NIL**

CLAUSE 19 C

Authority to decide penalty for each default	:	Engineer-in-charge

CLAUSE 19 D

Authority to decide penalty for each default	:	Engineer-in-charge

CLAUSE 19 G

Authority to decide penalty for each default	:	Engineer-in-charge

CLAUSE 19 K

Authority to decide penalty for each default	:	Not applicable

C … Nil I ….. Nil O …… Nil

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CLAUSE 32 (i)

Requirement of Technical Representative for SITC (s) and recovery rate

Sr. No.	Minimum qualification of Technical Representative	Discipline	Designation (Principal Technical / Technical representative)	Minimum experience	Number	Rate at which recovery shall be made from the contractor in the event of not fulfilling provision of clause 36 (i)	
						Figures	**Words**
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Senior Engineer (B.E / B. Tech)	Electrical / Electrical & Electronics	Technical Representative	One Engineer with min. 8 years of relevant experience and One Engineer with min. 5 years of relevant experience	2	25,000	Twenty -Five Thousands per month

Assistant Engineers retired from Govt. / IIT Delhi services that are holding Diploma will be treated at par with Graduate Engineers. Diploma holder with minimum 10 yearrelevant experience with a reputed construction co. can be treated at par with Graduate Engineers for the purpose of such deployment subject to the condition that such diploma holders should not exceed 50% of requirement of degree engineers.

CLAUSE 38

Authority to clause 38	:	Not applicable

C … Nil I ….. Nil O …… Nil

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COMMERCIAL AND ADDITIONAL CONDITIONS

1. GENERAL

1.1. Location: Various Substations at IIT Delhi.

1.2. The work shall be executed as per CPWD General Specifications for Electrical Works Part-I (Int.) 2023, Part-II (Ext.) 2023, Part-IV Sub Station – 2013, as amended upto date, relevant I.E. Rules, BIS/IEC and as per directions of Engineer-in Charge. These additional specifications/conditions are to be read in conjunction with above and in case of variations; specifications given in theseadditional conditions shall apply. However, nothing extra shall be paid on account of these additional specification and conditions, as the same are to be read along with schedule of quantities for the work.

1.3. The tenderer should in his own interest visit the site and get familiarize with the site conditions before tendering.

1.4. No T&P shall be issued by the Department and nothing extra shall be paid on account of this.

2. COMMERCIAL CONDITIONS:

2.1. **Type of contract:** The work to be awarded by this tender shall be treated as indivisible works contract.

2.2. **Submission and opening of Tenders:**

2.2.1. The tender is in two parts:

2.2.1.1. Part-I -Technical cum Un-priced commercial Bid

2.2.1.2. Part-II-Price Bid

2.3. The tender shall be submitted online, duly completed as per NIT conditions within period of bid submission.

2.4. The tenderers are advised not to deviate from the technical specifications / item, commercial terms and conditions of NIT like terms of payment, guarantee, arbitration clause, escalation etc.

2.5. Technical cum un-priced commercial bid only shall be opened on the due date and time inthe presence of tenderers or their authorized representative who wish to remain present.

2.6. Scrutiny/evaluation of the technical-cum-commercial bid shall be done by the department. In case, it is found that the technical-cum-commercial bid of a tenderer is not in line with NIT specifications/requirements and/or contains too many deviations, the department reserves the right to reject the technical bid of such firms(s) without making any reference to the tenderer(s).

2.7. Necessary clarifications required by the department shall have to be furnished by the tenderer within the time given by the department for the same. The tenderer will have to depute his representative to discuss with the officer(s) of the department as and when so

desired. In case, in the opinion of the department a tenderer is taking undue long time in furnishing the desired clarifications, his bid will be rejected without making any reference.

2.8. After obtaining clarification from all the tenders, the department will intimate the tenders whose technical cum commercial bids are acceptable.

2.9. The price bids of only those tenderers shall be opened whose technical bids are found to be technically acceptable. The time and date of opening of price bid shall be fixed after the technical cum unpriced commercial bid is accepted and intimated to them by post/Fax/e-mail.

2.10. The department reserves the right to reject any or all the price bids and call for fresh prices/tenders as the case may be without assigning any reason.

3. TERMS OF PAYMENTS

3.1. Payment shall be released after successful completion (Supply, Installation, Testing and satisfactory commissioning) of the work. However, R.A. bill may be preferred to the extent of prorate basis based on progress of overall work. Bidder should note that necessary documents (PAN card, cancelled cheque, GST Reg. proof and RTGS mandate form as per prescribed proforma of IIT Delhi) be submitted as soon as the work is awarded to them. Separate Contractor's Code shall be generated in IIT Delhi if the bidder is a new contractor toIIT Delhi ('Code' is perpetual in nature). Payment shall be processed after submission of Invoice and necessary documents / certificates (as mentioned in the NIT). There is a prevailing practice of pre-audit (for total tendered amount more than 3 lakhs) at IIT Delhi before releasing payment. Bidder shall have to comply all necessary documents as outlinedin the Contract as to be desired by the Auditor and or by the Accountant. It may take one to two months in the whole process (from submission / acceptance of bill in CMB / MB by the contractor upto processing by Accounts section) to release payment subject to quick compliance of all submittals by the contractor. Applicable Taxes shall be got deducted from the bill as per prevailing orders of the Government. 'GST part of the bill' shall be released after submission of proof of payment of GST, i.e. B2B challan, etc. as may be, by the contractor.

4. AWARD OF WORK

4.1. As the bids are invited in the QCBS mode. The Bidder obtaining the highest combined evaluation score i.e. sum of weighted technical and Commercial scores shall be considered for award of contract.

4.2. Work shall be awarded to the successful bidder only after concurrence of the **Auditor of the Internal Audit Section** of the IIT Delhi as per extant Rules of the Institute.

5. SECURITY DEPOSIT

5.1. Security Deposit shall be deducted from each running bill and final bill to the extent of 2.5% of the gross amount payable. The security deposit shall be released on the expiry of guarantee/ Maintenance period stipulated in the contract i.e 01 Years.

6. PERFORMANCE GUARANTEE

6.1. The successful tenderer shall submit an irrevocable performance guarantee of 5% of the

tendered amount in addition to other deposit mentioned elsewhere in the contract for his proper performance of the contract agreement within 15 days of issue of letter of acceptance of tender. This guarantee shall be in the form of Demand Draft/Pay order of irrevocable bank guarantee bond of any schedule bank or the State Bank of India in the specified perform a of Government Security, fixed deposit receipt pledged in favour of **Registrar, IIT Delhi** or as specified in the letter of acceptance of tender. The performance guarantee shall be initially valid up to the stipulated date of completion plus 60 days. This bank guarantee shall be kept valid till the recording of completion certificate for the work by the competent authority. This shall be released after submission of fresh bank guarantee for the comprehensive maintenance. Fresh bank guarantee shall have to be submitted @5% of the contract amount of comprehensive maintenance for the whole period of maintenance plus 60 days beyond.

6.2. Income tax, GST, labour cess & other statutory deduction etc. shall be made at source as per the prevalent laws. The deduction of Security Deposit, Income Tax, etc., shall be done after calculation for the above due payment as per clause 3 above and net payment shall reduce accordingly.

7. RATES

7.1. The rates quoted by the tenderer, shall be firm and inclusive of all taxes (including works GST & labour cess), duties, levies, etc. and all charges for packing forwarding, insurance, freight and delivery, installation, testing and commissioning etc. at site including temporary construction of storage, risks overhead charges, general liabilities/ obligations.

8. COMPLETENESS OF TENDER

8.1. All sundry equipments, fitting, unit assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connections and all other items which are useful and necessary for efficient assembly and installation of equipment and components of the work shall be deemed to have been included in the tender irrespective of the fact whether such items are specially mentioned in the tender documents or not.

9. STORAGE AND CUSTODY OF MATERIAL

9.1. The agency has to make his own arrangement for storage. No separate storage accommodation shall be provided by the department Watch and ward of the storage and their safe custody shall be responsibility till the final taking over of the installation by the department.

10. CARE OF THE BUILDING

10.1. Care shall be taken by the contractor while handling and installing the various equipment and components of the work to avoid damage to the building. He shall be responsible forrepairing all damages and restoring the same to their original finish at his cost. He shall also remove at his cost all unwanted and waste material arising out of the installation from the siteof work.

11. COMPLETION PERIOD

11.1. The completion period indicated in the tender documents is for the entire work of planning, designing, approval of drawings etc, arrangement of materials & equipments, delivery at site

including transportation, installation, testing, commissioning and handing over of the entire system to the satisfaction of the Engineer-in-charge.

12. GUARANTEE

12.1. The contractor shall guarantee the entire PLC and SCADA system for Energy monitoring and control for various 11 kV substation work etc. as per specifications both for components and for system as a whole. All E.I work shall be guaranteed for One year from the date of commissioning against unsatisfactory performance and / or breakdown due to defective design, workmanship or material. The equipment or component, or any part thereof, so found defective during guarantee period shall be forthwith replaced free of cost to the satisfaction of the Engineer-in-Charge. In case it is felt by the department that undue delay is being caused by the contactor in doing this, the same will be got done by the department at the risk and cost of the contractor. The decision of Engineer-in-Charge in this regard shall be final & binding on the contractor.

12.2. The tenderer shall guarantee among other things, the following:

12.2.1. Quality, strength and performance of the material used as per manufacturer's standards.

12.2.2. Safe mechanical and electrical stress on all part under all specified conditions of operation.

12.2.3. Satisfactory operation during the maintenance period.

13. POWER SUPPLY

13.1. Power supply shall be made available by the department at one point near the site free of cost, if required. Further, the arrangement for tapping power supply from this point shall be made by the contractor.

14. EXTENT OF WORK

14.1. The work shall comprise of entire labour including supervision and all material necessary to make a complete installation and such tests and adjustment and commissioning as may be required by the department. The term complete installation shall not only mean major items of the plant and equipment's covered by the specification but all incidental sundry components necessary for complete execution and satisfactory performance of installation with all layout charts whether or not those have been mentioned in details in the tender documents in connection with this contract as this is a turnkey job.

15. VALIDITY

15.1. Tenders shall be valid for acceptance for a period 75 days of days from the date of submission of the Bids.

16. COMPLIANCE WITH REGULATIONS AND INDIAN STANDARDS

16.1. All works shall be carried out in accordance with relevant regulation both statutory and those specified by the Indian Standards related to the works covered by this specification inparticular, the equipment and installation will comply with the following:

16.1.1. Factories Act

16.1.2. Indian Electricity Rules

16.1.3. B.I.S. & other standards as applicable

16.1.4. Workmen's compensation Act

16.1.5. Statutory norms prescribed by local bodies like fire department, CEA, Power Supply Co. etc.

17. INDEMNITY

17.1. The successful tenderer shall at all times indemnify the department, consequent on this works contract. The successful tenderer shall be liable, in accordance with the Indian Lawand Regulations for any accident occurring due to any cause and the contractor shall be responsible for any accident or damage incurred or claims arising there from during the period of erection, construction and putting into operation the equipments and ancillaryequipment under the supervision of the successful tenderer in so far as the latter is responsible. The successful tenderer shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the successful tenderer on account of the above.

18. ERECTION TOOLS

18.1. No tools and tackles either for unloading or for shifting the equipments for erection purposes would be made available by the department. The successful tender shall make his arrangement for all these facilities

19. COOPERATION WITH OTHER AGENCIES AND OCCUPANTS OF THE BUILDING

19.1. The successful tenderer shall co-ordinate with other working contractors, if any and other occupants of different offices / Labs, etc., and exchange freely all technical information so as to make the execution of this work / contract smooth. No remuneration should be claimed from the department for such technical cooperation. If any unreasonable hindrance is caused to other agencies and any completed portion of the work has to be dismantled and re-done for want or cooperation and coordination by the tenderer during the course of work, such expenditure incurred will be recovered from the successful tenderer if the restoration work to the original condition or specification of the dismantled portion of work was not under taken by the tenderer himself.

20. MOBILIZATION ADVANCE

20.1. No mobilization advance shall be paid for this work

21. INTERPRETING SPECIFICATION

21.1. In interpreting the specification, the following order of decreasing importance shall be followed in case of contradictions:

21.1.1. Schedule of quantities

21.1.2. Technical Specification

21.1.3. Drawing (if any)

21.1.4. General Specification for Electrical Works of CPWD (relevant Parts)

21.1.5. Relevant BIS or other international code in case BIS code is not available.

22. POLICY OF THE INSTITUTE

22.1. **Insti**tute has a policy against **sexual harassment** and is committed to providing an environment free from **sexual harassment of women** at the workplace. Contractor shall have to abide by the policy of the Institute with due diligence. Any violation on the part of the contractor shall be dealt with the extant rules of the Institute.

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QCBS BASED SELECTION/EVALUATION STAGES

The Bid evaluation Committee shall evaluate the technical and commercial Bids on the basis of the following stages:

Sr. no.	Evaluation Stages	Description of Stage
1.1.	**Stage-1 Preliminary Scrutiny after opening of Technical Bid**	The Bid Evaluation Committee shall scrutinize the Bid(s) based on the uploaded documents by the Bidder during the Bid Submission on CPP Portal. Bidders whose documents are not found inline to the NIT clauses shall be summarily rejected at this stage and will not be considered for further evaluation process.
1.2.	**Stage-2 Technical Evaluation**	The bidders who qualifies Stage-1 will be conveyed via email to participate in further QCBS based evaluation process as mentioned in clause no.1.6 page no.40-42 before the Bid evaluation committee. The Bid evaluation Committee shall evaluate the technical Bids on the basis of the QCBS technical evaluation criteria as per Clause no 1.6 page no 40 and 1.8.1.2 on page No. 43 of NIT. Technical Score TS shall be awarded on the basis of criteria as mentioned in clause 1.8.1.3.
1.3.	**Stage-3 Opening of Financial Bids**	Financial Bids of the Technically Qualified Bidders shall only be opened who has fulfilled the Stage-2 Technical Evaluation.
1.4.	**Stage-4 Commercial Evaluation of Bids**	The Bid evaluation Committee shall evaluate the Commercial Bids on the basis of the QCBS Commercial evaluation criteria as per Clause no 1.8.1.4 and 1.8.1.5 on page No. **43** of NIT. Commercial Score CS shall be awarded on the basis of mentioned criteria.
1.5.	**Stage-5 Final Evaluation of Bids**	Bid evaluation committee shall evaluate the Final Score of each bidder by adding the technical score and Commercial Score on the basis of clause No. 1.8.1.6 on page No 43 of NIT.
1.6.	**Stage-6 Publication of Total Scores**	Total Scores of the Evaluated Bids shall be published on the CPP portal.
1.7.	**Stage-7 Award of Work**	The award of work shall be as per the clause No. 4 on page No 34 and clause No. 1.8.1.7 and 1.8.1.8 on page No. 43 of NIT.

QCBS BASED SELECTION/EVALUATION CRITERIA

1. EVALUATION AND COMPARISON OF BIDS

1.1. Information relating to the evaluation of Bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with the bidding process until the same is published officially on the e-procurement portal for information of all Bidders.

1.2. Any effort by a Bidder to influence the department in the evaluation or contract award decisions may result in the rejection of its Bid(s)

1.3. The Bid Evaluation Committee constituted by the department shall conduct a preliminary scrutiny of the opened Bids at the beginning to assess the prima-facie responsiveness and record its findings thereof particularly in respect of the following:

1.3.1.1. that the Bid(s) is complete and duly signed by authorized signatory;
1.3.1.2. that the Bid(s) is valid for the period, specified in the NIT;
1.3.1.3. that the Bid(s) is unconditional; and
1.3.1.4. any other specific requirements put forth in the NIT.

1.4. Bids failing to meet these preliminary requirements shall be treated as non-responsive and shall not be considered further for evaluation.

1.5. DETERMINATION OF RESPONSIVENESS

1.5.1.1. The Bid Evaluation Committee constituted by the Department shall determine the responsiveness of Bids, based on the contents of the Bids submitted by the Bidder;

1.5.1.2. A Bid shall be deemed to be substantially responsive if it meets the requirements of the NIT condition without any material deviation,

1.5.1.3. The Bid Evaluation Committee shall examine the Technical Bids in particular to confirm that all requirements of NIT have been met without any material deviation, reservation or omission;

1.6. TECHNICAL EVALUATION PROCESS

The Bid evaluation committee shall carry out and determine the responsiveness of Bids based as per the clauses stipulated under the instruction to Bidders.

Evaluation Criteria (QCBS)

The Bid evaluation Committee shall evaluate the technical Bids on the basis of the following criteria:

S. No	Technical Eligibility Criteria	Evaluation Criteria	

1	Three similar works each costing not less than Rs.1,00,00,000.00, or two similar works each costing not less than Rs.1,50,00,000.00, or one similar work costing not less than Rs.2,00,00,000.00 (all figures rounded to nearest thousand)	1. Completed One Similar Work of >=80% of the Estimated Cost, as per clause No. 2.a.i, page No.12 of NIT- 25 Marks 2. Completed Two Similar Work of >=60% of the Estimated Cost, as per clause No. 2.a.i, page No.12 of NIT- 20 Marks 3. Completed three Similar Work of >=40% of the Estimated Cost, as per clause No. 2.a.i, page No.12 of NIT- 15 Marks	25 Marks
2	Bidder Experience - The Bidder should have completed multiple similar works in the last 7 years	Completed Similar Work of >=40% of the Estimated Cost, as per clause No. 2.a.i, page No.12 of NIT- # Maximum 5 Nos of Project Completed in all respect and completion certificate issued as per the NIT clause No. 8, page No. 13 of NIT 4 Marks for each Project	20 Marks
3	Should have had audited annual financial turnover of Rs. 12,50,00,000/- or more during the last 3 years ending 31stMarch 2025 (Financial year 2022-23, 2023-24, 2024-25). (Scanned copy of certificate from Chartered	1. Annual Turnover >= Rs. 25 Crore 20 Marks 2. Annual Turnover Rs. 20 Crore to <25 Crore- 15 Marks 3. Annual Turnover Rs. 12.5 Crore to <20 Crore- 10 Marks	20 Marks

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	Accountant to be uploaded)		
4	Approach & Methodology, Implementation Approach	Detailed approach to Project Coordination & Governance, Documentation & Reporting, Functional Support, Capacity Building, QA/Compliance, and O & M. Management, Technical Representative Qualification as per Clause 32 (i), page No. 32 of NIT 8 Marks Proposed governance structure, escalation matrix, risk register, and mitigation strategies. Resource Mobilization & Continuity Plan 6 Marks Mobilization timelines, onboarding steps, knowledge transfer, retention strategy, and backup resource planning. 6 Marks	20 Marks
5	Technical Presentation	Understanding of the project objective Approach & methodology of the proposed solution Demo of the proposed system Question and Answers	15 Marks
		Total	**100 Marks**

1.7. COMMERCIAL BID EVALUATION

1.7.1.1. Financial Bids for technically qualified bidders shall be opened online on CPP portal on the opening date as mentioned in Tender.

1.8. AWARD CRITERIA

1.8.1.1. Evaluation criteria proposed to be adopted will be Quality cum Cost Based System (QCBS) where Technical Bid Score will get a weightage of 30% and Commercial Bid Score a weightage of 70%.

1.8.1.2. All the bidders who secure overall minimum of 70% (70 Marks out of 100 Marks across all the components together) will be considered technically qualified. Technical scores of all bidders will be calculated based on the following formula:

1.8.1.3. Normalized Technical Score of bidders (TS)

$$= \frac{\text{Technical Marks received by bidder X100}}{\text{Highest Technical Marks received}}$$

1.8.1.4. The Bid having the Lowest Commercial Quote shall be termed as the Lowest Evaluated Bid and will be awarded 100 marks. Commercial scores of all the other bidders will be calculated based on the following formula

1.8.1.5. Commercial score of bidder (CS)

$$= \frac{\text{Commercial Quote of the lowest bidder X 100}}{\text{Commercial Quote of the bidder}}$$

1.8.1.6. Final Score of the bidder: Final Score of each bidding party will be computed by adding the technical score and Commercial Score on the basis of the following formula:

$$\textbf{Total Score} = \frac{\textbf{[(30*TS)+ (70*CS)]}}{\textbf{100}}$$

The bidder whose bid has secured the “Highest Total Score” out of 100 as per above evaluation will be considered as best evaluated Bid. In case of a tie where two or more bidders achieve the same highest overall score, the bidder with the higher technical score will be considered as best evaluated bid. The bidder with the highest final score shall be treated as the successful bidder.

1.8.1.7. Department is not bound to accept the best evaluated bid or any bid and reserves the right to accept any bid, wholly or in part.

SPECIAL TERMS & CONDITIONS

1. The Civil Work required for the installation and commissioning of the work in any respect shall be treated as part of work and no additional/extra payment shall be made on account of the same.
2. The contractor executing the work shall make necessary measures/arrangements to maintain the continuity of electric supply, electric work permit, shutdowns. Nothing extra shall be paid to the contractor in lieu of the same.
3. The work shall be carried out strictly in accordance with the specifications of the NIT & complete in all respect as required at site and shall also conform to requirement of Indian Electricity Rules, CPWD guidelines, CPWD specifications as applicable in force as amended up to date.
4. The above-mentioned conditions are only indicative and not limited to them. The contractors are required to quote their rates considering the work, inclusive of all the required materials, accessories, small or big in all respects. The contractor shall not be relieved of his responsibilities of completion of work for not mentioning some particular item, material, T&P etc. in the tender document. The parts not specifically included but required otherwise for the successful completion of the work, should form part of the equipment.
5. Minor material such as nuts, bolts, washers, M.S. Hooks, thimbles, ferrules, clamp etc. require completing the job will be provided by the contractor without any extra charges.
6. The OEM must produce atleast one PERFORMANCE CERTIFICATES of SCADA system along with the implementation of HT Network system for atleast one equipment working in good condition installed in government buildings, the system should have commissioned atleast 05 years from the date of submission of bids, the certificate shall be from the Engineer-in-charge (Not below the rank of Executive Engineer). The Performance certificate should be provided during the Technical Bid Scrutiny.
7. The offered equipment/system/solution must be in successful operation for atleast one year as on the date bid opening. However, the computer software/hardware shall be of latest current industry technology / standard models. Bidder shall be responsible to the technical requirements asset forth in this specification.

GUIDELINES TO BE FOLLOWED

Below Guidelines to be followed during the execution otherwise as specified in the CPWD, Indian Electricity Rules amended up to date.

1. Insulating mats, rubber gloves, electrical insulated shoes etc., shall be used while carrying out work at or near electrically live apparatus / Equipment etc.
2. Only insulated or non-conducting tools should be used on or near live electrical apparatus /Equipment.
3. All electrical tools used shall be "all insulated" or "double insulated" tools which do not require earthing.
4. Only persons having valid licenses should be allowed to work on electrical facilities.
5. No person should be allowed to work on live circuit. The same, if unavoidable, special care and precautions need to be taken.
6. Treat all circuits as "LIVE" unless tested and made dead.
7. Electrical "Tag Out" lock out procedure "MUST" be followed for carrying out maintenance jobs.
8. Display voltage ratings prominently with "Danger" signs.
9. Put caution / notice signs before starting the repair works.
10. All electrical equipment shall have separate and distinct connections to earth grid.
11. Proper grounding to be ensured for all switch boards and equipment including portable ones prior to taking into service.
12. Make sure that electrical switchboards, portable tools, equipment (like grinding machine etc.) don't get wet during their usage. If it happens, stop the main supply, make the tools dry and then only use them. Check proper earthing. All temporary switch boards put up at work site should be suitably protected from rain and the level of same should be high enough to avoid contact with water due to water logging.
13. Don't work with wet hands / body on electrical system.
14. Don't overload the electrical systems.
15. Use only proper rated High Rupturing Capacity fuses or circuit breakers.
16. Industrial type extension boards and Plug sockets are only to be used.
17. ELCB for all temporary connections must be provided. Use insulated 3-pin plug tops.
18. All power supply cables should be laid properly and neatly so that they don't cause hindrance to persons working and no physical damage also takes place to the cables during various construction activities.
19. All Power cables shall be properly terminated using glands and lugs of proper size and adequately crimped.
20. Never connect any earthing wire to the pipelines / structures.

21. Don't make any unsafe temporary connections, naked joints / wiring etc.
22. Ensure that temporary cables are free from cuts, damaged insulation, kinks or improper insulated joints.
23. Check at periodic intervals that pins of sockets and joints are not loose.
24. Protect electrical wires / equipment from water and naked flames.
25. Insulating mats shall be provided in the front and back end of switch boards.
26. All parts of electrical installations should be so constructed, installed and maintained as to prevent danger of electric shock, fire and external explosion.
27. Inspection and maintenance:
28. All electrical equipment should be tested as per approved procedures and commissioning inspected before to ensure suitability for its proposed use.
29. At the beginning of every work, the person using the electrical equipment should make a careful external examination of the equipment and conductors, especially the flexible cables for any physical damage, which is likely to give electric shock or damages to the equipment.
30. When work has to be done in dangerous proximity to live parts the power supply should be cut off. If for operational reasons this is not possible, the live parts should be fenced off or enclosed by qualified staff from the work area concerned.

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TECHNICAL SPECIFICATIONS of SCADA System

Term and conditions for SCADA compatibility of items under BOQ

1. Provision has to be made such that SCADA may be implemented for all HT and LT installations in future or during the course of this work.
2. SCADA is required for monitoring and control of HT panels, monitoring of transformers, LT panels, AMF panel etc. The SCADA items i/c hardware and software components are not required to be supplied like server, RTU, OFC, I/O cards etc.
3. But compatibility of all supplied equipment should be there with SCADA as per BOQ or otherwise. The Agency has to facilitate properly if any SCADA agency is appointed before completion of this work. The requirements of the user related to SCADA is as given below:

Present Tender Requirements

Followings parameters at 23 Nos HT panels of 11kV is required to be taken for SCADA work.

Control (23 Nos 11 KV Substation)-

1. Breaker Open.
2. Breaker close.

Monitoring (23 Nos 11 KV Substation) –

1. Trip circuit supervision.
2. DC supply supervision.
3. Circuit breaker position (service/test/ isolated).
4. Circuit breaker condition (On/off/Trip).
5. Isolator Position (Open/Close).
6. Isolator Earth switch position.
7. Temperature and moisture through sensor.

All the parameters of multifunctional and power quality meters.

Relay (23 Nos 11 KV Substation)-

1. Complete trip/ Fault detail
2. Master trip relay supervision.
3. DC supply healthy.
4. Status of electrical supply of trip circuit.
5. Control of breaker through relay.

- Monitoring of the parameters of 26 Nos DG sets including Engine Parameters, Alternator Parameters, Electrical Parameters, Mechanical Parameters etc.
- Monitoring of the parameters of 150 Lifts including Drive / Electrical faults, ARD parameters, BMS.
- Monitoring of the parameters of 03 Nos 100Hp, 415V Pumps including VFD parameters, Electrical and mechanical parameter etc.
- Monitoring of the all MFM parameters of Main MCC LT Panels / AMF Panels for Incomers and Outgoing Feeders related to Power, Voltage, Current, THD, Frequency, KVAR etc. form of 50 Nos Substation MCC / AMF LT Panels.

Future Requirements

Following parameters at all LT/AMF (panels are required to be taken in future SCADA work.

- Breaker On/off/ trip

. Integration and monitoring of MFM of the Medium and Small Size LT Panels

Following parameters of 11 / 0.433 kV Transformers are required to be taken in future SCADA work.

1. Transformer breaker trip
2. PRV alarm/Trip
3. MOG Alarm/Trip
4. Buchholz Alarm/Trip
5. OTI Alarm /Trip
6. WTI Alarm/ trip
7. OSR Alarm/ trip
8. Transformer trip supervision

- The Contractor shall also implement any other requirements related to SCADA, not specifically mentioned above, but necessary for the complete functioning of the system.

SCOPE OF WORK:

Works to be done under SCADA:

1. The institute is planning to design and implement the electrical power distribution system to minimize the power failure / interruption, to increase the reliability, to monitor the system seamlessly / conveniently and to control the system efficiently.
2. Further the institute is moving towards substation automation system using state of art 'Supervisory Control and Data Acquisition' (SCADA) based graphical interface for seamless centralized monitoring and controlling at 11 kV level, increasing the reliability of the system.
3. For integrating all the substations through SCADA, modification / retrofitting / up gradation will be required at every sub-station level depending on the condition of the substations. Some additional works are also involved at most of the substations i.e. substations are to be equipped with SCADA compatible hardware & software.

The work of substation automation system can be categorized in following sections:

i. SCADA compatible enabling work

ii. Monitoring Work.

iii. Control Work.

4. SCADA compatible enabling work.
   i. All the substations are equipped with optical fiber cable (OFC). The work related to any modification/ retrofitting (if reqd.) in OFC network is not under this scope of work. However, it is to be communicated by the contractor to the department well in advance. One IP address at each substation location will be provided by the Institute.
   ii. Detailed site survey and integration of data communicable digital / microprocessor-based relays.
   iii. Integration of analog meters with data communicable digital multifunctional meters (MFMs).
   iv. Installation of communication system for monitoring and controlling work by using SCADA software.
5. Monitoring Work:
   i. The successful bidder will have to plot the power equipment and apparatus like cable (11kV), Transformers, VCB Panels etc. to the campus Auto-CAD map. However, soft copy of map will be made available to them during execution of work. They have to feed a static data (e.g. cable size, cable length, specification of 11kV switchgear, Transformer, specification of power panel connected to transformer secondary side) in the software map. These will be displayed on navigation of the cursor/

mouse on the monitoring screen.

ii. The dynamic status of 11kV equipment and apparatus will be shown on clicking the particular equipment. However, the fault & Alarm should be visible even without clicking the equipment. In case of fault, the details (time, type, intensity) will be shown on clicking. The dynamic data are- Voltage, Current, Frequency, PF, Directional Power, Breaker Position (On / OFF /Trip), Spring charging condition, Relay Status, Alarm, Breaker Trip Circuit Healthy.

iii. Recording of kWH, Breaker position history, Fault History and Alarm.

6. Control Work:

i. Remote closing & breaking of 33kV & 11kV switchgears through SCADA software.

ii. Development of interlocking logic for charging the feeder after failure of particular feeder.

The campus is having 11 kV ring mains system. So, the software is to be developed in such way that it prevents the supplies from two sources in a particular feeder. The route or sequence of operation of 11 kV switchgears, for smooth functioning of 11kV ring mains, is clearly to be defined. All the possible combinations of switchgears should be accessible to the user without edit (write) option and with read only option.

SCADA System

1. The SCADA System shall consist of a software package, an HMI software package, I/O interfacing software (communication drivers wherever required), Servers, required operating systems, standalone PCs and industry standard networking hardware.
2. The SCADA software will read and write data to field controllers, archive and display historical data and provide graphics screens and reports so that operators, supervisors and maintenance personnel can quickly and easily maintain and operate the system.
3. As the customer is making a substantial financial investment, the vendor shall be able to demonstrate a strong history of upgradability from one version of their software to another, with virtually no reconfiguration or engineering effort required to migrate functionality to new versions.
4. The SCADA platform shall facilitate applications in the broad categories of (a) energy performance, Power availability, quality and reliability, and (c) sustainability performance. At a high level, the feature-set shall provide functions in:

i. Real-time monitoring.

ii. Alarming and event management.

iii. Sequence of events analysis

iv. Energy cost analysis.

v. Energy, power, and sustainability data analytics and visualization.

vi. SCADA Software should be able to share required data with IBMS Software.

vii. Control of 11kV VCBs through numerical relays.

viii. Integration of wireless sensors (temperature & humidity sensors).

ix. Integration of all the MFM, Power quality meters & Numerical relays.

5. The software platform shall be certified for use as a part of an ISO50001 program and verifiably support compliance. In addition, the functionality shall support ongoing ISO50001 programs per the following areas of Section 4 of the ISO standard:

    i. Energy review.

    ii. Energy baseline.

    iii. Energy performance indicators.

    iv. Monitoring, measurement, and analysis.

    v. Input to management review.

    vi. The SCADA shall verifiably support compliance with EN 16247-1 for energy audits.

    vii. The SCADA shall include Modular, licensable optional applications to expand the basic functionalities of the core platform should be Complete in all respect.

6. Supervisory Control and Data Acquisition (SCADA) System shall be provided with control system architecture using computers, networked data communications, graphical user interfaces for high-level process supervisory management, other peripheral devices such as programmable logic controller (PLC), micro-PLC and discrete PID controllers (whatever applicable) to interface with the various equipment, panels etc. in all Electrical Substations.

7. The SCADA System comprising of complete Hardware & Software (latest version), wiring & cabling, allied accessories etc. along with facility to integrate through BMS.

SCADA for all the Substation (11kV)

A) Introduction

1. Power SCADA shall Control and Monitor the following electrical distributions.
    a. 11kV Main Substation
    b. 11kV Bharti substation
    c. 11kV Library Substation
    d. 11 KV Computer Substation
    e. 11KV Synergy Substation
    f. 11KV Chemical Engineering Substation
    g. 11KV Civil Engineering Substation
    h. 11KV MSB Substation
    i. 11KV NRF Substation
    j. 11KV Nilgiri Substation
    k. 11KV Zanskar Substation
    l. 11KV 99 B & 99 C Substation
    m. 11KV Girnar Substation
    n. 11KV Dronagiri Saptagiri Substation
    o. 11KV Sahyadri Substation
    p. 11KV RMU Substation
    q. 11KV Vishwakarma Substation

- Thermal and humidity monitoring (for existing sensors).
- All relays shall communicate through IEC 61850 / TCPIP / RS 485 / RS 232 protocol as applicable.
- All energy meters/ multi- functional meters (MFMs) shall communicate through RS485 / Ethernet/ RS 232 protocol as applicable.
- Control & Monitoring of the systems shall be as per the Substation-wise IO list.

B) Architecture

1. 11kV IEDs shall communicate through IEC 61850 protocol.
2. 11kV Panel- Control & Monitoring shall be done though SCADA software.
3. Multifunction meter/ Numerical relays shall be communicated to SCADA through RS 485 Modbus Serial communication/ Ethernet communication whatever applicable. All required shielded pair cables from Field MFM/ Power quality meter are in the scope of the bidder and item rates shall be payable as per actual measurement.
4. Cables shall be looped in daisy chain in case of Modbus communication & shall be terminated to nearest Ethernet gateway. Meters & Numerical relays with

ethernet communications shall be directly connected to Ethernet switch.

5. Bidder shall make use of the existing fiber optic ring to form the SCADA network.
6. Thermal sensor and humidity sensor shall communicate with ethernet gateway.
7. Main Control Centre will be located at Main Substation.

8. Client / Server architecture based on TCP/IP networking and report-by-exception (RBE)

   Technology

9. Standalone single server for operation, monitoring and reporting with historical data and can be connected to LAN.
10. Where multiple servers are deployed, the system shall be capable of being configurable from a single client.
11. Capable of operating Client/ Server and Server/ Server links over low to medium speed channels depending upon database size (e.g. 128K)
12. Application shall be native 64-bit versions and supported on Windows® Server and Workstation operating systems including Windows 2000, Windows XP, Windows 2000 Server R2 or better.

C) Database

1. The SCADA database shall be of true relational database design and optimized for real- time SCADA operation (Core Based SQL). The database shall be object oriented and organized in a hierarchical structure. It shall support user-created “Templates” that allows management of common configuration from a single point in the database. Instances of templates shall be used for repetitive, standard configuration.

Templates of standard configuration shall support multiple object types including, but not limited to:

- Point / Tag objects
- PLC or RTU objects
- Mimics or Graphic display objects
- Trend objects
- Logic programs
- Schedules
- Link objects

The SCADA database shall allow users to extend the database schematic to store custom data, in either the configuration or data stream. These changes can be performed online without need for server restart.

C … Nil I ….. Nil O …… Nil

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TECHNICAL SPECIFICATIONS PLC AUTOMATION SYSTEM OF SUB-STATIONS

1.0 GENERAL:

The system shall be of state-of- the art design suitable for operation under electrical environment present in Extra high voltage substations, follow the latest engineering practice, ensue long-term compatibility requirements and continuity of equipment supply and the safety of the operating staff

The bidder needs to furnish KEMA Certificate / Equivalent Certificate from Development Centre authorized by UCA Working Group for having products including all IEDs and Ethernet Switches conforming to IEC: 61850 as Pre - Qualification Requirement.

1.1 The Substation Automation System (SAS) shall be installed to control and monitor all the substation equipment from local control Centre.

The SAS shall contain the following main functional parts:

- SCADA software for control & monitoring.
- Server desktop PC
- Managed switched Ethernet Local Area Network communication infrastructure
- Peripheral equipment like display units, key boards, Mouse etc.

1.2 It shall enable local station control via a PC by means of human machine interface (HMI) and control software package, which shall contain an extensive range of Supervisory Control and Data Acquisition (SCADA) functions.

1.3 Inter-operability with third party IEC 61850 Edition 1 & 2, compliant devices

1.4 The setting of parameters or the activation of parameter sets shall only be allowed after entering a password through appropriate authorization level

2.0 SYSTEM DESIGN:

2.1 General system design.

The Substation Automation System (SAS) shall be suitable for operation, controlling and monitoring of the complete substation including future extensions.

The system shall be of the state-of-the art suitable for operation under electrical environment present in Extra high voltage substations follow the latest engineering practice, ensure long- term compatibility requirements and continuity of equipment supply and the safety of the operating staff.

The offered SAS shall support control and monitoring from Local Control centres via gateways. The system shall be designed such that personnel without any background knowledge in Microprocessor-based technology are able to operate the system. The operator interface shall be intuitive such that operating personnel shall be able to operate the system easily after having received some basic training.

C … Nil I ….. Nil O …… Nil

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The system shall incorporate the control, monitoring and protection functions specified, self- monitoring, signalling and testing facilities, measuring as well as memory functions, event recording and evaluation of disturbance records.

Maintenance, modification or extension of components may not cause a shutdown of the whole substation automation system. Self-monitoring of components, modules and communication shall be incorporated to increase the availability and the reliability of the equipment and minimize maintenance.

Separate pages in the GUI (Graphic user Interface) has to be provided for the changeovers options to be executed in the ring mains with adequate precautions and with sufficient interlocks to prevent any accidental switching of conflicting switchgears

2.2 Functional Requirements:

2.2.1 Select-before-execute:

For security reasons the command is always to be given in two stages: selection of the object and command for operation under all modes of operation except emergency operation. Final execution shall take place only when selection and command are actuated.

2.2.2 Run Time Command cancellation.

Command execution timer (configurable) must be available for each control level connection. If the control action is not completed within a specified time, the command should get cancelled.

2.2.3 Self-supervision.

Continuous self-supervision function with self-diagnostic features shall be included.

2.2.4 User configuration.

The monitoring, controlling and configuration of all input and output logical signals and binary inputs and relay outputs for all built-in functions and signals shall be possible both locally and remotely.

It shall also be possible to interconnect and derive input and output signals, logic functions as perIEC61131-3, using built-in functions, complex voltage and currents, additional logics (AND- gates, OR gates and timers). (Multi-activation of these additional functions should be possible).

2.2.5 Station Visual Display Interface.

2.2.5.1 Substation HMI Operation:

On the HMI the object has to be selected first. If a selection is valid the position indication will show the possible direction and the appropriate control execution button shall be pressed in order to close or open the corresponding object. A 75" LED screen with server computer has to be provided by the agency.

2.2.5.2 Presentation and dialogues- General:

The operator station display shall provide basic functions for supervision and control of the substation. The operator shall give commands to the switchgear on the screen via mouse clicks or keyboard commands.

The system shall give the operator access to alarms and events displayed on the screen. Aside from these lists on the screen, there shall be a printout of alarms or events in an event log.

An acoustic alarm shall indicate abnormalities, and all unacknowledged alarms shall be accessible from any screen selected by the operator.

The following standard pictures shall be available from the HMI.

- Single-line diagram showing the switchgear status and measured values.
- Control dialogues with interlocking and blocking details. This control dialogue shall tell the operator whether the device operation is permitted or blocked.
- Measurement dialogues.
- Alarm list, station
- Event list, station
- System status.

2.2.5.3 Design principles:

Consistent design principles shall be adopted concerning labels, colours, dialogues and fonts. Non-valid selections shall be dimmed out. The object status shall be indicated using different status colours for:

- Selected object under command
- Selected on the screen
- Not updated, obsolete values, not in use or not sampled
- Alarm or faulty state
- Normal state

2.2.5.4 Process status displays and command procedures:

The process status of the substation in terms of actual values of currents, voltages, frequency, active and reactive powers as well as the positions of circuit breakers shall be displayed in the station single-line diagram.

In order to ensure a high degree of security against undesired operation, a “select-before- execute” command procedure shall be provided. After the “selection” of a switch, the operator shall be able to recognize the selected device on the screen and all other switchgear shall be blocked. As communication between control centre and device to be controlled is established, the operator shall be prompted to confirm the control action and only then final execute command shall be accepted. After the “execution” of the command the operated switching symbol shall flash until the switch has reached its new position.

The operator shall be in a position to execute a command only, if the switch is not blocked and ifno interlocking condition is going to be violated. The interlocking statements shall be checked by the interlocking scheme implemented at bay and station level.

After command execution the operator shall receive a confirmation that the new switching position has been reached or an indication that the switching procedure was unsuccessful withthe indication of the reason for non-functioning.

2.2.5.5 System supervision & display.

The SAS system shall be comprehensively self-monitored such that faults are immediately indicated to the operator, possibly before they develop into serious situations. Such faults are recorded as a faulty status in a system supervision display. This display shall cover the status of the entire substation including all switchgear, IEDs, communication infrastructure and printers at he stations level etc.

2.2.5.6 Event list.

The event list shall contain events that are important for the control and monitoring of the 11Kv substation.

The event and associated time (with 1 ms resolution) of its occurrence has to be displayed for each event.

The operator shall be able to call up the chronological event list on the monitor at any time for the whole substation or sections of it.

A printout of each display shall be possible on the hard copy printer.

The events shall be registered in a chronological event list in which the type of event and its time of occurrence are specified. It shall be possible to store all events in

the computer for at least one month. The information shall be obtainable also from a printed event log.

The chronological event list shall contain:

- Position changes of circuit breakers, load break switches and earthing devices.
- Indication of protective relay operations.
- Fault signals from the switchgear.
- Indication when analog measured values exceed upper and lower limits. Suitable provision shall be made in the system to define two level of alarm on either side of the value, or which shall be user defined for each measured.
- Loss of communication.
- Filters for selection of a certain type or group of events shall be available. The filters shall be designed to enable viewing of events grouped per:
- Date and time.
- Bay
- Device
- Function e.g., trips, protection operations etc.
- Alarm class.

2.2.5.7 Alarm list:

Faults and errors occurring in the substation shall be listed in an alarm list and shall be immediately transmitted to the control centre. The alarm list shall substitute a conventional alarm tableau and shall constitute an evaluation of all station alarms. It shall contain unacknowledged alarms and persisting faults. The date and time of occurrence shall be indicated.

The alarm list shall consist of a summary display of the present alarm situation. Each alarm shall be reported on one line that contains:

- The date and time of the alarm.
- The name of the alarming object.
- A descriptive text.
- The acknowledgement state.

Whenever an alarm condition occurs, the alarm condition must be shown on the alarm list and must be displayed in a flashing state along with an audible alarm. After acknowledgment of the alarm, it should appear in a steady (i.e., not flashing) state and the audible alarm shall stop. The alarm should disappear only if the alarm

condition is physically cleared and the operator has reset the alarm with a reset command. The state of the alarms shall be shown in the alarm list (Unacknowledged and persistent, Unacknowledged and cleared, Acknowledged and persistent).

Filters for selection of a certain type or group of alarms shall be available as for events.

2.2.5.8 Object picture:

When selecting an object such as a circuit breaker or isolator in the single-line diagram, the associated bay picture shall be presented first. In the selected object picture, all attributes like

- Authority
- Local / remote control
- Errors etc.,

shall be displayed.

2.2.5.9 Control dialogues:

The operator shall give commands to the system by means of mouse click located on the single- line diagram. It shall also be possible to use the keyboard for command activation. Data entry is performed with the keyboard. Dedicated control dialogues for controlling at least the Breaker shall be available.

2.2.6 User-authority levels:

It shall be possible to restrict activation of the process pictures of each object (bays, apparatus) within a certain user authorization group. Each user shall then be given access rights to each group of objects e.g.:

- Display only.
- Normal operation (e.g. open/close of switchgear)
- Restricted operation (e.g. by-passed interlocking)
- System administrator
- For maintenance and engineering purposes of the station HMI, the following authorization levels shall be available:
- No engineering allowed.
- Engineering/configuration allowed.
- Entire system management allowed.

The access rights shall be defined by passwords assigned during the log-in

procedure. Onlythe system administrator shall be able to add / remove users and change access rights.

2.2.7 Reports:

The reports shall provide time-related follow-ups of measured and calculated values. The data displayed shall comprise:

- Trend reports:
  - Day (mean, peak)
  - Month (mean, peak)
  - Semi-annual (mean, peak)
  - Year (mean, peak)
- Historical reports of selected analog values:
  - Day (at 15 minutes interval)
  - Week
  - Month
  - Year

It shall be possible to select displayed values from the database in the process display on- line. Scrolling between e.g. days shall be possible. Unsure values shall be indicated. It shall be possible to select the time period for which the specific data are kept in the memory.

Following printouts shall be available from the printer on demand:

i. Daily voltage and frequency curves depicting time on X-axis and the appropriate parameters on the Y-axis. The time duration of the curve is 24 hours.

ii. Weekly trend curves for real and derived analog values.

iii. Printouts of the maximum and minimum values and frequency of occurrence and duration of maximum and minimum values for each analog parameter for each circuit in 24 hours period.

iv. Provision shall be made for logging information about breaker status like number of operations with date and time indications.

v. Equipment operation details shift wise and during 24 hours.

vi. Printout on adjustable time period as well as on demand for MW, MVAR, Current, Voltage on each feeder and transformer as well as Tap positions, temperature and status of pumps and fans for transformers.

vii. Printout on adjustable time period as well as on demand system frequency and average frequency.

viii. Reports in specified formats, which shall be handed over to successful

bidder.

2.2.8 Trend display (historical data):

It shall be possible to illustrate all types of process data as trends – input and output data, binary and analog data. The trends shall be displayed in graphical form as column or curve diagrams with a maximum of 10 trends per screen. Adjustable time span and scaling ranges must be provided.

It shall be possible to change the type of value logging (direct, mean, sum or difference) on- line in the window. It shall also be possible to change the update intervals on-line in the picture as well as the selection of threshold values for alarming purposes.

3.0 SYSTEM HARDWARE, SOFTWARE & CONFIGURATION:

3.1 Time Synchronization

The system can be synchronized manually by operator (date and time) or automatically from the site synchronization system.

For the system to visualize Sequence of Events in chronological order and with 1ms time accuracy ,the system devices connected to the Ethernet network shall be synchronized and the timestamping of the events must be performed by the acquisition device (IED, PLC, RTU) with 1ms accuracy

3.2 Switched Ethernet Communication Infrastructure:

The bidder shall provide the Ethernet communication infrastructure for SAS. The bidder shall keep provision of 20% spare capacity for employer use. One switch shall be provided to connect all TCP based equipment like RTU, IED, MFM.

Ethernet switches that fulfill the hardened requirements concerning temperature, EMC, power supply (220/110 V DC from the Station Battery) and complying to IEC61850- 3 of the specification suitable to be installed in substations.

External switches are preferred as they have the advantage that there is no interruption or reconfiguration of the Ethernet ring if one or several bay devices are taken out of service.

The Specification of Ethernet Switches as below:-

The Firewall shall be required to be installed and operated in the industrial environment. It shall comply with the specification requirements. It shall be suitable for operation with rated/ 110/ 220 V DC or universal AC +/- 15% redundant power supply. It should be Rack Mountable. The following requirements shall be met.

EMI/EMC And Environmental Requirement

The substation firewall shall meet the following general requirements: a) Substation hardened for operating in temperatures from 0 to 85 deg c b) Relative humidity 20% to 90% non-condensing.

c) IP30/above rating

d) EMI/EMC and Environmental Type test requirements as per Table 1 & Table 2 respectively)

Table 1 EMI/EMC Type Tests

Sl. No. Test Standard Description

1. IEC 61000-4-2 Electrostatic discharge immunity test Enclosure Contact Enclosure Air.
2. IEC 61000-4-3 Radiated Radio Frequency Electromagnetic field immunity test Enclosure Ports
3. IEC 61000-4-4 Electrical Fast Transient Burst immunity test Power ports, Earth ports, Control Ports Signal Ports
4. IEC 61000-4-5 Surge immunity test Signal Ports, A.C. Power Ports D.C. Power Ports
5. IEC 61000-4-6 Immunity to conducted disturbances, induced by radio-frequency fields Signal Ports DC Power ports AC Power Ports Earth ground Ports
6. IEC 61000-4-8 Power frequency magnetic field immunity test Enclosure Ports:
   (a) Continuous
   (b) 1sec
7. IEC 61000-4-29Voltage dips, short interruptions and voltage variations on dc input power port immunity tests DC Power Ports
8. IEC 61000-4-11Voltage dips, short interruptions and voltage variations immunity tests AC Power Ports
9. IEC 61000-4-18 Damped oscillatory wave immunity test Signal Ports DC Power Ports AC Power Ports
10. IEC 61000-4-16 Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz Signal Ports DC Power Ports
11. IEC 61000-4-17 Ripple on dc input power port immunity test DC Power Ports

Table 2

Environmental Type Tests

Test Standard Description

1. IEC 60068-2-1 Cold Temperature Test Ad
2. IEC 60068-2-2 Dry Heat Test Bd
3. IEC 60068-2-30Humidity (Damp Heat, Cyclic) Test Db
4. IEC 60255-21-1Vibration endurance test

C … Nil I ….. Nil O …… Nil

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5. IEC 60255-21-2Shock withstand test

3.3 SCADA Software for Power Management and Control

A. Software - General:

1. Furnish a dedicated, edge control, software platform (The Software Platform) that is purpose-built to be the operational interface for a Power Management and Control System (PMCS) whose primary purpose is to support the provision and management of safe, reliable and efficient power within buildings and facilities. The Software Platform shall have specialized data acquisition, visualization, analysis and reporting tools specifically designed for Power Management applications such as:
    a. Source and Network Control.
    b. Electrical Distribution System Monitoring and Alarming.
    c. Electrical System Capacity Management.
    d. Power Quality Monitoring and Compliance.
    e. Multi Source Management.
    f. Continuous Electrical Thermal Monitoring.
    g. Breaker Setting Monitoring.
    h. Backup Power Testing.
    i. Power Events Analysis.
    j. Energy Usage Analysis and Energy Benchmarking.
    k. Utility Bill Verification and Cost Allocation.
    l. Energy Performance Analysis and Verification.
    m. Active Arc Flash Protection.
2. The Software Platform shall natively support (no additional installation or configuration of the software required) devices specifically designed for power distribution and power quality monitoring including: programmable power analyzers, power meters, branch and multi-circuit meters, smart panels with communicating circuit breakers, protection relays, electrical distribution thermal and / or humidity sensors.
    a. All registers shall be pre-mapped to standard measurement names – no additional register mapping required.
    b. All native device types have been factory-tested and proven to perform.
    c. The Software Platform shall be certified as part of an Energy Data Management System according to the sections of the following ISO standards:

        ISO 50001

i. Energy review
ii. Energy baseline
iii. Energy performance indicators.
iv. Monitoring, measurement, and analysis
v. Input to management review

ISO 50002

i. Data collection
ii. Measurement plan
iii. Analysis
iv. Energy audit reporting

ISO 50006

i. Obtain relevant energy performance information from the energy review
ii. Identify energy performance indicators

3. The Software Platform shall follow secure product development lifecycle practices as defined by IEC62443-4-1 as well be certified to the IEC62443-4-1 standard.
4. The Software Platform shall be certified to comply at the component level with cybersecurity standard IEC62443-4-2 at Security Level 2.
5. The Software Platform supports compliance with cybersecurity standards IEC62443-2-4 and IEC62443-3-3.
6. The Software Platform shall have a UCAIug "Level A" IEC 61850 conformance certificate.
7. The Software Platform shall be designed to streamline the process of checking and maintaining EN50160 and IEEE 519 Power Quality compliance.
8. The Software Platform shall natively support the continuous thermal/ humidity monitoring system (if exist) with the ability to detect abnormal bus bar or cable temperatures due to loose or faulty connections and to prevent equipment damage and fire.
9. The functionality of the Software Platform shall be extensible whereby additional capabilities may be added via software license activation codes without the need to install additional software modules or add-ons.
10. The Software Platform shall natively support the vendor's active arc flash protection system with the ability to detect and then distinctively indicate, classify and display alarm information as an arc flash alarm.

B. Software - Real Time Monitoring and Control:

1. The Software Platform shall have a graphical monitoring and analysis application with support for custom graphics/images for the purposes of:
    a. Creating graphical diagrams of the Power Monitoring system, including electrical single line diagrams, facility maps, plan views, floor layouts, equipment representations, and mimic displays.
    b. Displaying electrical network status through real-time electrical single line diagram animation based on a tag value expression.
    c. Monitoring complex auto-transfer schemes in real time.
2. The Software Platform shall be capable of writing to device registers for operations such as resetting, triggering, toggling, switching, manual waveform capture, controlling remote devices, equipment and circuit breakers for power management applications such as Source and Network Control and Multi Source Management.
3. The Software Platform shall have a web-enabled, real-time tables application that provides interactive side-by-side visualization of real-time measurements.
4. The Software Platform shall have a power monitoring trending application with graphical charts for real-time trending of power usage (kW, Volt, Amp, and kWH) or any measurement supported by metered equipment such as generators and MV/LV switchgear.
5. The Software Platform shall support the following as it relates to graphical monitoring:
    a. HTML5 enabled graphics.
    b. Graphics should resize based on whatever monitor or viewing device is being used.
    c. Ability to automatically display additional graphics and graphic details as operators zoom in.

d. It shall be possible to use JavaScript to customize the behavior of each graphic.

e. The Software Platform graphics editor shall be able to import Scalable Vector Graphics (SVG) technology.

f. A built-in library of ANSI and IEC Power graphics symbols shall be provided with the Software Platform.

g. Operators must be able to change from one graphic to another by selecting an object with a mouse - no menus will be required.

h. It shall be possible to create and save graphical components and JavaScript code in reusable and transferrable, customized libraries.

i. The ability to have multiple instances of a graphic and edit one instance to change all.

j. Ability to import .gif, .png, .bmp, .jpeg, .tif, and CAD generated picture files as background displays, and layering shall be possible.

6. The Software Platform shall support arc flash protection devices with a built-in set of real-time graphical indicators for use in electrical one-line diagrams that indicate occurrence of arc flash incidents.

7. The Software Platform shall continuously monitor the health status of the arc flash sensors and the sensor's interconnection between different devices. In case of bad health state the operator shall receive an alarm in the Software Platform.

C. Software – Alarm and Event Analysis and Notification:

1. The Software Platform shall have a mechanism to create standard, user-defined alarm hierarchy views that fit user defined criteria.

2. The Software Platform shall support the following as it relates to alarm performance:

   a. Maximum 10s response time from event capture in a device and display in the software alarm viewer.

   b. Retrieve and display timestamped alarms directly from devices that support onboard alarm logging.

   c. Retrieve and display timestamps to 1ms resolution from devices that support 1ms timestamp resolution.

   d. Create PC-based alarms to 1ms resolution from reading device values.

   e. Multiple alarm types, including: Timestamped, Digital, Analog, Advanced, Multi- Digital, Timestamped Digital, Timestamped Analog.

3. The Software Platform shall have a mobile alarm notification component that will use the native high availability, hot-standby failover redundancy of the platform, not its own separate redundancy mechanism.

4. The Software Platform shall provide a web based power events analysis application that includes but is not limited to the following features:

   a. Automatic, intelligent clustering of events into alarms and multiple alarms from multiple devices into "incidents" to simplify the analysis of multiple cascading events.

   b. Automatic categorization of alarms and incidents into predefined categories such as Arc Flash and Other.

   c. Predefined views for events, alarms and incidents with intuitive navigation and easy to use, configurable filters based on priority, status, source and categories.

   d. Popup window with detailed information about where, what and when an alarm or incident happened and a thumbnail summary view of all waveforms associated with the alarm or incident.

e. For Power Quality alarms or incidents captured by Disturbance Direction Detection (DDD) compliant devices there shall be clear graphical indication of the direction of the disturbance (upstream or downstream relative to the DDD compliant device).

f. Percentage impact of load lost due to power event to allows for faster prioritization of alarms most impacting system

5. The Software Platform shall provide a graphical timeline view of alarms and events that constitute an "incident" in the electrical distribution network. The timeline view shall:

   a. Display alarms/events stacked by order of time for sequence of events analysis.

   b. Display the start and end of alarms/events with color-coded dots.

   c. Indicate if there are captured waveforms associated with the incident.

   d. Have a configurable analysis window with a color-coded time slider that uses color to indicate areas in the timeline where there are greater numbers of alarms.

6. The Software Platform shall include a web-based Smart Waveform Analyzer interface with the following capabilities:

   a. Toggle on/off Voltage/Current channels.

   b. RMS calculation, zoom, pan, export to CSV.

   c. Interactive phasor and harmonic (voltage and current) diagrams. d. Allow multiple waveforms to be compared to each other.

   d. Support for waveforms in COMTRADE format (IEEE Std C37.111-1999 and C37.111- 2013)

7. The Software Platform shall include an alarm annunciator to display the total number of unacknowledged alarms with a breakdown of how many are high, medium and low priority and shall allow easy navigation to the alarm viewer with a single click.

8. The Software Platform shall be able to acquire specialized, high speed power disturbance data directly from onboard advanced power quality meters for the purpose of Power Events

Analysis, including:

   a. Timestamped Power Events with Disturbance Direction Detection (DDD).

   b. Pre/post event waveform captures (Voltage and Current all phases).

9. The Software Platform shall automatically perform analytics upon captured waveforms and when possible provide natural language description of the likely cause of the Power Quality event to the operator.

D. Software – Data Analytics and Visualization:

1. The Software Platform shall include an interactive, web-based Dashboard application that provides auto-updating dashboard views that may contain not only energy and power data but water, air, gas, electric, and steam (WAGES), historical data trends, power quality, images, and content from any accessible URL address.
2. Users shall be able to create, modify, view, and share their dashboards (including graphics, labels, scaling, measurements, date ranges, etc.) using only a browser and without the need for a separate software application to design, create, modify or publish dashboards.
3. The Software Platform shall support kiosk slideshow displays by assigning individual dashboards to slideshows to run in unattended mode, scrolling through designated dashboards at a configurable time interval.

a. Any number of kiosk slideshow displays may be created and configured to run independently on any computer using a browser.

4. The Dashboard application shall provide a library of standard graphical objects (gadgets) including Bar, Pie, Trend, Real Time and Web Portal
5. The Dashboard application shall provide a library of specialized energy usage graphical objects (gadgets) including Period Over Period Comparison, Pareto Charts, Heat Map / Carpet Plot and Sankey Diagrams.
6. The Dashboard application shall provide a library of specialized Power Quality graphical objects (gadgets) including PQ Downtime Impact, PQ Rating, PQ Incident Breakdown and Location.
7. The Software Platform shall provide an interactive, web-enabled Reports application that allows users to generate, modify, save and manage reports based on pre-formatted report templates (up to 64 templates) that are designed to support the following:
    a. Energy Billing, Verification and Allocation.
    b. Energy Management and Performance.
    c. Power Quality Performance and Compliance (EN50160 and IEEE 519).
    d. Electrical Equipment Operation and Performance (Breakers, UPS's and Generators).
8. The reporting tool shall support automatic distribution (via email or shared folder) on a schedule basis or based on event or manual export using the following output formats: .csv,.xlsx, .pdf, .tiff, .html, .xml.

E. Software – Technical Infrastructure:

1. The Software Platform shall be able to be installed on a physical computer or virtual machine and shall support a variety of Windows operating systems including Server and non-Server class Windows operating systems.
2. The Software Platform shall be developed and designed to help secure power monitoring and control operations and comply to cybersecurity policies by adhering to the following:

a. Must follow Secure Development Lifecycle product development processes. b. Minimum of two-factor authentication.

b. Two-factor or multi-factor authentication does not require Internet access and may be used on an isolated network.

3. The Software Platform shall be able to operate in a network environment with configurable firewalls that perform deep packet inspection for Modbus communications.
4. The Software Platform shall support the following cybersecurity features:
   a. Encrypt the transmission of data between the Software Platform Server and its Web Clients using Transport Layer Security (TLS) version 1.3.
   b. Establish secure authentication between the Software Platform Server and its Web Clients using Certification Authority (CA) certificates.
   c. Encryption and hashing of system credentials using AES256 and SHA-512 respectively.
   d. Capable of installing into a Federal Information Processing Standard (FIPS) compliant environment.
   e. Application Whitelisting.
   f. Encrypt the transmission of data between the Software Platform primary node and secondary node using Transport Layer Security (TLS) version 1.3.
   g. Security events in SYSLOG format
   h. Digitally signed files to allow for verification of authenticity of installed software
5. The Software Platform shall support the integration of Windows Active Directory for users and groups from across multiple domains to facilitate the following:
   a. Login to the Software Platform using Windows credentials.
   b. Enforce password policies via Windows (complexity and expiration). c. Role-Based Access Control (RBAC).
6. The Software Platform shall support definition and mass deployment of Role-Based Access Control (RBAC) settings for the software itself and connected devices in the system.
7. The Software Platform shall be able to log up to 100,000 tags of historical data at a 1-minute interval and store this amount of data for up to 2 years.
   a. The historical 1-minute interval data shall be accessible to the user in a web interface via the following reports that can be formatted as XML, Excel, Word or PDF documents: Single Device Usage, Multi Device Usage, Trend and Tabular reports.
8. The Software Platform shall intelligently and automatically acquire data from devices, including onboard events, trends and waveforms from natively-

supported device types:

a. Without any need for software configuration or data upload scheduling.

b. Onboard, high resolution timestamps (1ms) shall be retrieved without degradation or modification even for devices that support clock synchronization via GPS, IRIG-B, NTP or PTP (Precision Time Protocol).

c. Timestamp Quality status shall be retrieved directly from devices that support this data quality attribute.

9. The Software Platform shall support device-level Modbus integration with the following capabilities:

   a. Dynamic scaling of register values and not require a separate scaling register to perform value scaling for power and energy data.

   b. Modbus master to read/write registers in Modbus devices for monitoring and control applications.

   c. The software shall be capable of Modbus device definition (device drivers) creation to enable integration of third-party Modbus protocol devices.

10. The Software Platform shall support a specialized diagnostics user interface designed for power management that shows all power devices, automatically highlighting errors and potential causes of underperformance.

11. The Software Platform shall support OPC AE Server alarm and event data sharing applications amongst OPC AE systems.

12. The Software Platform shall support OPC DA Server 2.01 with the following capabilities:

    a. Provide default OPC Server tag mappings for all natively supported device types without the need to select, configure, or program the mapping of device registers to OPC tags.

    b. Provide a flexible means to add or change OPC mappings and shall support the ability to add custom measurements.

13. The Software Platform shall support OPC DA Client 2.01 real-time data interoperability.

14. The Software Platform shall support OPC UA Client and Server for data sharing between OPC UA compliant systems.

15. The Software Platform shall support ability to integrate other web applications into its web interface via use of pluggable web content widgets.

16. The Software Platform's Reporting and Dashboard web applications shall be simultaneously accessible from their own individual web addresses so that they may be embedded in other web-based software environments.

17. The Software Platform shall support Web Services interoperability with the following capabilities:

    a. Web Services Server for sharing real-time, historical (i.e. timestamped

trend data), and alarm data (i.e. timestamped event strings) from the Software Platform to other Web Services Client applications.

b. User interface for Web Services configuration and mapping.

c. Provide the ability to acknowledge alarms by authenticated and authorized clients.

18. The Software Platform shall have an Extract, Transform, and Load (ETL) engine for exchanging data between files, databases and systems with the following capabilities:

    a. User Interface for specifying connection information, data formats, measurement mappings and schedules.

    b. Support for importing data from .csv and .xml data files, Wonderware Historian databases and other 3rd party databases via old DB connections.

19. The Software Platform shall function without disruptions (including communications, logging, and alarming) in the following ways:

    a. Software components can be installed and available on both primary and secondary nodes.

    b. Software components on the secondary node are up but will not process data or requests to avoid double polling of connected devices.

    c. Data is mirrored in near real time and both nodes will have identical data. Data replication is done through the software's capabilities and provides a recovery time of a few seconds automatically in case of the primary node being unavailable.

    d. The software shall provide the ability to achieve up to eight times device redundancy per connected device.

    e. Historical data shall be synchronized and backfilled in a data historian following a primary node failover recovery.

20. The Software Platform shall have a single, end user software application specifically designed for integrating Modbus, IEC 61850 Ed1, IEC 61850 Ed2, IEC 60870-5-104 and DNP3 device types and shall have the following capabilities:

    a. Simple creation and management of device definitions (device drivers).

    b. Pre-defined, default measurement system (Common Data Model) for consistent mapping of Modbus, IEC 61850, IEC 60870-5-104 and DNP3 tags to standard measurements.

21. The Software Platform shall allow integration of IEC 61850, Modbus or IEC 60870-5-104 devices via an import of System Configuration Document (SCD) file compliant with IEC 61850-6 standard.

22. The Software Platform shall support offline software configuration management for efficient system deployments and upgrades.

23. The Software Platform shall support internationalization and regional settings.

24. The Software Platform shall provide factory support for the following languages: English, French, German, Russian, Spanish, Norwegian and Swedish.
25. The Software Platform shall support the ability to change its default language at any time directly from the web client without the need for any additional installation or advanced software configuration.
26. The Software Platform supplier shall make self-paced training content and documentation accessible over the Internet. This training and documentation will outline how to configure and operate the Software Platform.

F. Service – Software System Optimization:

1. The Software vendor shall furnish a set of specialized power analytics and reporting tools (The Analytics and Reporting Tools) designed to help Power Management Service Professionals evaluate the configuration and performance of the software system, diagnose specific problems in the electrical power system and suggest recommended actions to take based on the probable causes.
2. The Analytics and Reporting Tools shall be certified as part of an Energy Data Management System in accordance to the data validation requirements of ISO 50001 Section 4.6.1 (Monitoring, measurement and analysis).
3. The Analytics and Reporting Tools shall diagnose various data quality and power monitoring system configuration issues and suggest probable causes including:
    a. Device has been removed or is not logging any of the requested measurements.
    b. Communications to the device has been lost or are intermittent.
    c. Multiple devices have been assigned the same connection information.
    d. Load has been removed or needs repair.
    e. CT shorting blocks left closed or Voltage disconnects left open.
    f. Breaker has tripped.
    g. Malfunctioning pulse counter.
    h. Control system malfunction.
    i. Current Transformer (CT) polarity error.
    j. Dual load/generator or generator operating during reporting period.
    k. Metering device has multiple or high frequency logging triggers configured.
    l. Measurement units mismatch across metering devices in the system.
    m. Logging interval mismatch across metering devices in the system.

4. The Analytics and Reporting Tools shall diagnose various energy balance problems in the power monitoring system and suggest probable causes including:
    a. Submeters are not all fed by current meter.
    b. Incorrect device names or communication information.
    c. Power meter has a misconfigured CT ratio or Potential Transformer (PT) ratio.
    d. Incorrect phase wiring in main power meter or submeter.
    e. Missed wire or disconnected phase.
    f. Locally generated power reported as consumed power.
    g. Non-radial distribution system.
    h. Wrong sized CT – the CT is too large to accurately measure the load.
5. The Analytics and Reporting Tools shall diagnose and report various electrical power quality issues for conditions including:
    a. Over/under voltage.
    b. Voltage imbalance.
    c. Transformer overcapacity.
    d. Excessive voltage and current harmonic distortion.
    e. Excessive lagging Power Factor.
6. The Analytics and Reporting Tools shall be intelligent enough to make suggestions for harmonic mitigation equipment suitable to counteract any chronic excessive harmonics conditions that may be detected.
7. The Analytics and Reporting Tools shall be intelligent enough to make suggestions for mitigation equipment suitable to counteract any excessive lagging power factor conditions that may be detected, and estimate the return on investment for the installation of the equipment compared to estimated utility penalties for power factor.
8. The System Optimization Service shall be delivered by Power Management Service Professionals from the software vendor and/or software vendor's certified system integrator partner organization.
9. The System Optimization Service shall be provided at least twice per year at approximately six month intervals.
10. The System Optimization Service shall be able to be applied to existing systems and shall not require the software system to be upgraded or connected to the internet at any time.

ANNEXURE - 1

<< Organization Letter Head >>

DECLARATION

I / We,_____hereby declare that all the information anddata furnished by our organization with regard to this tender specification are true and complete to thebest of our knowledge. I / we have gone through the specification, conditions and stipulations in details and agree to comply with the requirements and intent of specification.

1	Name & Address of the bidder	**:**	
2	Phone	**:**	
3	E-mail	**:**	
4	Contact person name	**:**	
5	Mobile number	**:**	
6	GSTIN number	**:**	
7	PAN number	**:**	
8	UTR no. [if deposited online] for EMD	**:**	
9	DD / FDR / Banker's Cheque No. [if uploaded scanned copy] for EMD	**:**	
	BANK DETAILS of the Bidder		
10	Bank name	**:**	
11	Branch address	**:**	
12	Branch telephone no.	**:**	
13	MICR Code of the bank	**:**	
14	IFSC code	**:**	
15	Bank Account no.	**:**	
16	Type of account	**:**	
17	Pl attach one cancelled cheque	**:**	

We further declare that our organization has not been blacklisted / delisted or put to any holiday byany Institutional agency / Govt. Department / Public Sector Undertaking in the last three years.

(Signature& name of the bidder)
Seal of the bidder

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

ANNEXURE – X1

UNDERTAKING FROM OEM / MANUFACTURER (SELF CERTIFICATION IN CONFORMITY TO RELEVANT CODES AND STANDARDS ISSUED BY BIS)

We, M/s ..... (with name of OEM and complete address) hereby certify that the entire SCADA, PLC installation including components, safety devices, various types of controls etc., testing, inspection, operation & maintenance shall conform to relevant Codes, Standards, code of practices, guidelines, safety rules, inspection manual(s), rules issued by Bureau of Indian Standards, as amended up to the last date of receipt of tender as per the following list of BIS Standards.

a. Copy of BIS certificate from manufacturer of PLC.
b. Copy of ISO: 9001:2015 certification of PLC system Manufacturer.
c. Copy of ISO: 14001:2015 certification of PLC system Manufacturer.
d. Copy of ISO: 45001:2018 certification of PLC system Manufacturer.
e. Copy of BIS certificate from manufacturer of SCADA System.
f. Copy of ISO: 9001:2015 certification of SCADA system Manufacturer.
g. Copy of ISO: 45001:2018 certification of SCADA system Manufacturer.
h. Copy of ISO: 14001:2015 certification of SCADA system Manufacturer.

In addition to the above BIS Standards the entire installation and its individual components shall comply to all other relevant codes / Standards as applicable.

For M/S……

…….

(Authorized signatory of OEM/ manufacturer)

Note: To be furnished on a 'Non-Judicial' stamp paper worth Rs. 200/-.

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

ANNEXURE – X2

UNDERTAKING FROM THE MANUFACTURER

(To be submitted prior to the supply of SCADA, PLC)

We stand guarantee for availability of spares for the entire life of the installation of SCADA, PLC a period of minimum …….....years after completion of the installation or handing over of the SCADA, PLC system whichever is later.

(Note: period shall be up to 20 years)

For M/S .....……,

…….

(Authorized signatory of SCADA, PLC manufacture)

Note: To be furnished on a 'Non-Judicial' stamp paper worth Rs. 200/-

FORM 'C'

DETAILS OF ALL WORKS OF SIMILAR CLASS COMPLETED DURING THELAST SEVEN YEARS ENDING LAST DAY OF THE BID SUBMISSION

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

- Indicate gross amount claimed and amount awarded by the Arbitrator.

Signature of Bidder(s)

FORM 'C-1' PROJECTS UNDER EXECUTION

S. No.	Name of work / project and location	Owner or sponsoring organization	Cost of work in crores of rupees	Date of commen cement as per contract	Stipulated date of completion	Upto date percentage progress of work	Slow progress if any and reasons thereof	Name and address/ telephone number of officer to whom reference may be made	Remarks
1	2	3	4	5	6	7	8	9	10

Signature of Bidder(s)

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

GENERAL SPECIFICATIONS

1.0 The work shall be carried out as per CPWD general Specifications for Electrical Works Part – I, II & Part-IV Sub Station – 2013 as amended upto date along with the following changes, relevant IE Rules and as per directions of Engineer-in-Charge.

C … Nil I ….. Nil O …… Nil

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Substation Electrical Works		
S.No.	**Material**	**Preferred makes of Material**
1	Air Circuit Breaker	Schneider / LK / Siemens / ABB / Legrand
2	Panels- Type Tested Assemblies (TTA)	ABB / Schneider / LK / Siemens / Rittal / Legrand
3	LT Panel Builder (TTA & PTTA)	Advance / Tricolite / Milestone / Precision System Controls /Marine / Asiatic
4	Transformer (Oil Type)	Schneider / Crompton Greaves / Siemens / ABB / Bharat Bijlee / BHEL
5	33 / 11 KV VCB HT Panels	Schneider / ABB / Siemens / LK
6	APFC Panel	Schneider / ABB / Siemens / LK / Rittal
7	Cables Glands	Comet / Dowel / Braco / Siemens
8	Maintenance Free Earthing & Lightening protection System	Altec / Teksai / OBO Betterman / Jef Techno / ABB / Cape
9	Protection Relays	Schneider / ABB / Siemens
10	BMS	ABB / Schneider / Siemens / Allen Bradley / GE
11	SCADA System	ABB / Schneider / Siemens / GE
12	MCB(10KA)/ Isolators & MCB DB with End Box.	Legrand /Siemens/ LK / ABB/ Schneider
13	MCCB	ABB/ Legrand /Schneider / LK/ Siemens
14	MCCB BOX	Legrand / Siemens/ LK / ABB/ Schneider
15	Distribution Board	Legrand /Siemens/ LK / ABB/ Schneider
16	XLPE Alumium/ Copper conductor Armoured cable	Polycab/ Finolex/ / KEI/ Universal
17	Multifunction Meter	LK/ AE/ Schneider/ Rishabh / Secure / Fluke / Conzerv
18	Ammeter	LK/ AE/ Universal/ Rishabh/ Meco/ Kaycee/ Enercom / Conzerv / Secure/ Fluke
19	Voltmeter	LK/ AE/ Universal/ Rishabh/ Meco/ Kaycee/ Enercom / Secure / Fluke / Conzerv

C … Nil I ….. Nil O …… Nil

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20	Frequency Meter	Digitron/ AE/ Rishabh/ Meco/ Keltron/ Fluke / Conzerv / Secure.
21	CT's	LK/AE/ KAPPA/ Precision/ Marshal / Pragati
22	Selector Switches	LK/AE/ KAPPA/ Pragati/ Marshal/ Precision
23	Contractors	Legrand /Siemens/ LK / ABB/ Schneider
24	Push button & Pilor lamps	BCH/ L K/ Siemens/ Vaishno
25	LED indicating Lights	L K/ Siemens/ Kaycee/ Crompton/ Vaishno
26	Cable raceway floor/ wall mounted & Accessories(MS/G.I)	Legrand/ BEC/ Honeywell/ OBO Betterman.
27	Sandwich Bus trunking/ Rising Main	Siemens / C&S/ L K/ Schneider/ ABB / Anant Power (Advance) / Legrand
28	HT Termination Cable joint Kit	Raychem/ M-Seal/ Densons/ 3M
29	Batteries	Panasonic / Exide / Amaron / Amarraja
30	Batteries Charger	Amarraja / Statcon / Chhabi / AE

C … Nil I ….. Nil O …… Nil

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BID SUBMISSION CHECK LIST

ONLINE BID SUBMISSION:

The Online bids (complete in all respect) must be uploaded online in **two** Envelops as explainedbelow:-

Envelope – 1 (Following documents to be provided as single PDF file)			
Sl. No.	**Documents**	**Content**	**File Types**
1	Technical Bid	Annexure - 1 duly filled in and got signed	.PDF
2		Annexure – X-1, X-2, C-1, C-2 duly complied and got signed (on OEM Letter Head).	.PDF
3		Enlistment certificate of composite category. (Not required for specialized agency)	.PDF
4		EMD submission proof with undertaking	.PDF
5		The Authorization Certificate form the OEM shall be Bid specific, Tender Specific Authorization Certificate on the Letter Head of OEM, to be uploaded during the online submission of Bid	.PDF
6		Certificate of work experience as desired with BOQ	.PDF
7		Certificate of GST Registration with undertaking	.PDF
8		Affidavit as per provision of the clause 1.2.2 of IITD-6	.PDF
9		Acceptance to execute INTEGRITY PACT	.PDF
10		OEM or Authorized dealer cannot participate in the tender simultaneously, if found both the bids of OEM and authorized dealer shall be summarily rejected and no communication shall be entertained in this regard	
11		Valid Electrical License in the name of the contractor (Not required for OEM)	
12		IITD 7 / 8 duly signed	.PDF
13		Any other document as specified in the NIT	.PDF
Envelope – 2			
Sl. No.	TYPES	Content	
1.	**Financial Bid**	Price bid should be submitted in BOQ format.	.EXL

C … Nil I ….. Nil O …… Nil

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SCHEDULE OF QUANTITY

Name of work: Supplying, installation, testing and commissioning of PLC and SCADA system for Energy monitoring and control for various 11 kV substation, lifts and reservoirs at IIT Delhi.

Sr. No.	Item Discription	Qty	Unit	RATE	AMOUNT
	Description (Section-A)				
1	Design, development, supplying, installation, testing and commissioning of Duly wired Control panel fabricated out of C.R.C.A 2 mm M.S sheet for housing PLC hardware, Redundant 24V DC power supply, interposing relays for Digital Outputs & Consumables with complete as required. Having following PLC Hardware:-				
1.1	**Main Sub-Station [01 Nos.]**				
1.1.1	logic controller, Modicon M241, 40 IO, transistor, PNP, Ethernet- 1 Nos	1	Each		
1.1.2	discrete input module, Modicon TM3, 32 inputs, HE10, 24V DC-3 nos				
1.1.3	discrete output module, Modicon TM3, 32 outputs transistor PNP, HE10-1 nos				
1.1.4	preformed cable, Twido, for IO extension, 2m- 8 Nos				
1.1.5	Modbus to Modbus TCP Gateway-6 Nos				
1.1.6	16PORT unmanage switch - 1 nos				
1.1.7	10amp Redundant Power supply with diode ORing - 1 nos				
1.1.8	Interposing relays 1C/O 24VDC ON DO/DI ONLY-128 nos				
1.2	**Bharti Sub-Station [01 Nos.]**				
1.2.1	logic controller, Modicon M241, 40 IO, transistor, PNP, Ethernet-1 Nos	1	Each		
1.2.2	discrete input module, Modicon TM3, 32 inputs, HE10, 24V DC- 3 nos				

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1.2.3	discrete output module, Modicon TM3, 16 relay outputs, screw, 24V DC-1 nos				
1.2.4	preformed cable, Twido, for IO extension, 2m- 8 nos				
1.2.5	Modbus to Modbus TCP Gateway- 8 nos				
1.2.6	16PORT unmanage switch - 1 nos				
1.2.7	10amp Redundant Power supply with diode ORing - 1 nos				
1.2.8	Interposing relays 1C/O 24VDC ON DO/DI ONLY- 112 nos				
1.3	**TIFAC Sub-Station, Library Substation, Computer Sub Station, Civil eng Sub station, Zanskar Sub station, Himadri Substation, Girnar Sub Station, Dronagiri sub station, Shayadri sub station, Reservoir 2, Reservoir 3 [11 Nos.]**				
1.3.1	logic controller, Modicon M241, 40 IO, transistor, PNP, Ethernet- 1 NOS	11	Each		
1.3.2	discrete input module, Modicon TM3, 32 inputs, HE10, 24V DC-1 NOS				
1.3.3	discrete output module, Modicon TM3, 16 relay outputs, screw, 24V DC-1 NOS				
1.3.4	preformed cable, Twido, for IO extension, 2m- 4 NOS				
1.3.5	Modbus to Modbus TCP Gateway- 4 NOS				
1.3.6	16PORT unmanage switch - 1 NOS				
1.3.7	10amp Redundant Power supply with diode ORing - 1 NOS				
1.3.8	Interposing relays 1C/O 24VDC ON DO/DI ONLY- 48 NOS				

C … Nil I ….. Nil O …… Nil

JE(E) AEE(E) PFC EE(ED-1)

1.4	**Chemical Engg Sub-Station, MSB Sub Station, Nilgiri Sub station, Hospital Sub Station, Synergy Sub station, 6 RMU sub station, Block-VI NRF Sub-Station, LHC sub station, RI Park substation, 99 B Sub-Station, 99 C Sub-Station, Data Center Sub station [12 Nos.]**				
1.4.1	logic controller, Modicon M241, 40 IO, transistor, PNP, Ethernet- 1 NOS	12	Each		
1.4.2	discrete input module, Modicon TM3, 32 inputs, HE10, 24V DC- 2NOS				
1.4.3	discrete output module, Modicon TM3, 16 relay outputs, screw, 24V DC-1 NOS				
1.4.4	preformed cable, Twido, for IO extension, 2m- 6 NOS				
1.4.5	Modbus to Modbus TCP Gateway- 4 NOS				
1.4.6	16PORT unmanage switch - 1 NOS				
1.4.7	10amp Redundant Power supply with diode ORing - 1 NOS				
1.4.8	Interposing relays 1C/O 24VDC ON DO/DI ONLY- 80 NOS				
1.5	**Reservoir 1 [01 Nos.]**				
1.5.1	logic controller, Modicon M241, 40 IO, transistor, PNP, Ethernet- 1 NOS	1	Each		
1.5.2	discrete input module, Modicon TM3, 32 inputs, HE10, 24V DC- 1 NOS				
1.5.3	discrete output module, Modicon TM3, 16 relay outputs, screw, 24V DC- 1NOS				
1.5.4	preformed cable, Twido, for IO extension, 2m- 4 NOS				
1.5.5	analog input module, Modicon TM3, 8 inputs, screw, 24V DC- 1 NOS				
1.5.6	analog output module, Modicon TM3, 4 outputs, screw, 24V DC- 1 NOS				
1.5.7	Modbus to Modbus TCP Gateway- 4 NOS				

C … Nil I ….. Nil O …… Nil

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1.5.8	16PORT unmanage switch - 1 NOS				
1.5.9	10amp Redundant Power supply with diode ORing - 1 NOS				
1.5.10	Interposing relays 1C/O 24VDC ON DO/DI ONLY- 60 NOS				
2	**Description Section – B**				
2.1	Design, development, supplying, installation, testing and commissioning of Power SCADA/Plant SCADA with 10000 Tag with Driver IEC61850 compatible. IEC 61850 data modelling and communications: Maer and Client SCADA PC with License for Redundancy (2 SCADA package software with license) Up to 10,000 configurable data points ("tags") for SCADA monitoring and control, Built-in historian for data logging, analytics, alarms and events. Scalable architecture (can expand beyond licensing by upgrade) Report Development and Generation as per the direction of Engineer in charge.	1	Each		
3	**Description Section - C Hardware & Accessories**				
3.1	Supplying, installation, testing and commissioning of PC with Latest generation processor, Core i7, 14thGen, 16 Gb Ram , 1Tb SSD, Key Board Mouse Set , K.B Mouse Set Dual Lan Port 6 No. USB port, Windows 10 proff. Original , 24"inch Hp Screen , Mac Fee ANTIVIRUS 1 Year , 1 GB Graphics card ,3 Year Warranty , MS Office std PC (2 SCADA SERVER + 1 SCADA WORKSTATION), (24" MONITOR), + (1 REPORT SERVER) complete as required and as per the direction of Engineer in charge.	3	Each		
3.2	Supplying, installation, testing and commissioning of ethernet STP cable CAT6A as complete as required.	1525	Meter		
3.3	Supplying, installation, testing and commissioning of ethernet patch cable of 2 metre length as complete as required.	250	Each		
3.4	Supplying, installation, testing and commissioning of RJ45 ethernet connector contain as complete as required .	200	Each		
3.5	Supplying, installation, testing and commissioning of 6 PORT LIU (FULLY LOADED) as complete as required.	26	Each		

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3.6	Supplying, installation, testing and commissioning of PATCH CORDS FO (SM) as complete as required.	112	Each		
3.7	Supplying, installation, testing and commissioning of ARMOURED CONTROL CABLE 1X18C as complete as required.	3000	Meter		
3.8	Supplying, installation, testing and commissioning of ARMOURED POWER CABLE 2.5X3C as complete as required.	1000	Meter		
3.9	Supplying, installation, testing and commissioning of ARMOURED MODBUS CABLE 2.5X3C	4500	Meter		
3.10	Supplying, installation, testing and commissioning of Junction Box FOR FIELD TERMINAL as complete as required.	30	Each		
3.11	Supplying, installation, Testing & Commissioning of following capacity at full load (Unity Power Factor) ON LINE Uninterrupted Power Supply (UPS) system suitable for Single Phase input, Single Phase output AC Supply. The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch along with provision for manual bypass, suitable isolation transformer for additional protection against neutral faults etc. The UPS systems shall be Microprocessor based Digital Control, using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier & inverter with PWM (Pulse Width Modulation) Technology. The quality of design, manufacturing and inspection process should confirm to the relevant Inter-national standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be >95% at 100% non-linear loads. Current total harmonic distortion (ITHD)/ total demand distortion (TDD) on the input grid shall be < 5% at 100 %load. (The required LC filters shall be included in UPS cost), extreme power factor kit to be include to limit the input pf to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1)				

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3.11 (A)	However UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC single phase 160-270V 50 Hz and delivering output AC supply true sine wave single phase 220/230/240 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins and 150% for 1 minute. Operating temperature 0 to 40 0C, Relative humidity 0-95% non-condensing, noise level less than 60db at 1 meter distance, Protection for Under voltage, over voltage, abnormal output voltage, battery over charging, output over current, short circuit, battery deep discharge , 10 KV surge. Display for watt/VA, Amp and Voltage power parameters etc. UPS shall comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI) type UPS (as per standard IEC 62040-1, 2 & 3) . The UPS should be with IGBT Based Inverter Technology, Communication RS232/ RS485/ SNMP port open protocol for BMS integration as per approved by Engineering in charge. Required battery racks, DC breaker of suitable rating and interconnecting copper conductor cable of suitable size and connectors and all required accessories are inclusive in the cost. The UPS should have QR code which should contain drawing, test report OEM manual, Geo- Tag of manufacturing location etc.				
3.11.1	6KVA	2	Each		
3.12	Supplying and installing following size of perforated Hot Dipped Galvanized Iron cable tray (Galvanization thickness not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc. as required.				
3.12.1	300 mm width X 50 mm depth X 1.6 mm thickness	400	Metre		
3.13	Supplying and installing following size of perforated Hot Dipped Galvanised Iron cable tray "bends" (galvanisation not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc. as required.				

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3.13.1	300 mm width X 50 mm depth X 1.6 mm thickness	10	Each		
	Grand Total				

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