NIT No.: IITH/CMD/ELE/NIT/2025-26/13

భారతీయ సాంకేతిక విజ్ఞాన సంస్థ హైదరాబాద్
भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

NOTICE INVITING TENDER
(NIT)

Name of work: Construction of Centre of Excellence for Centre of Clean Coal Energy & Net Zero (CLEANZ) facility at IIT Hyderabad.

Sub Head: Internal & External Electro-Mechanical Works for CLEANZ Facility.

6-2-2026

Executive Engineer - Electrical
IIT Hyderabad

INDIAN INSTITUTE OF TECHNOLOGY (IIT) HYDERABAD
NOTICE INVITING TENDER

NIT No. IITH/CMD/ELE/NIT/2025-26/13

The Indian Institute of Technology (IIT) Hyderabad invites on behalf of the President of India online bids (e-tenders) in Item rate / ~~Percentage rate~~ in Two Bid (Technical Eligibility + Financial) system, from the approved and eligible Electrical contractors of CPWD and those of appropriate list of M.E.S. / BSNL/ Railways/ State P.W.D./Central PSUs/State PSUs/State Govt. departments/Central Govt. Departments/Eligible Specialized agencies/Eligible contractors for the following work as per the stipulated terms and conditions mentioned below:

Copy of valid Registration of Firm (ROF) certificate, PAN card, GST Registration certificate & GSTIN should accompany the Technical Bid and those certificates should be valid on the last date of submission of bid.

1.1	NIT No.:	**IITH/CMD/ELE/NIT/2025-26/13**
1.2	Name of Work:	**Construction of Centre of Excellence for Centre of Clean Coal Energy & Net Zero (CLEANZ) facility at IIT Hyderabad.** **Sub Head: Internal & External Electro-Mechanical Works for CLEANZ Facility.**
1.3	Location of work	**Indian Institute of Technology (IIT) Hyderabad campus, Kandi-502284, Sangareddy, Telangana, India.**
1.4	Estimated Cost: *(given merely as a rough guide)*	**Rs.2,77,67,457/- only**
1.5	Earnest Money Deposit (EMD):	**Rs.5,55,500/-only**
1.6	Period of Completion:	**08 Months**
1.7	Date of Online Publication/Download of Tender	***06/02/2026 @ 17:00hrs***
1.8	Last Date for Submission of Bids	***20/02/2026 @ 17:00hrs***
1.9	Date and time of Opening of Technical Bids	***21/02/2026 @17:30hrs***
1.10	Date and time of Opening of Financial Bids	**To be decided**
1.11	Cost of Bid Document:	**NIL**
1.12	Website	**https://eprocure.gov.in/eprocure/app**

Executive Engineer (Electrical)
IIT Hyderabad

Instructions to the Bidders for Online Bid Submission

The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, preparing 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: https://eprocure.gov.in/eprocure/app.

REGISTRATION

1) Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: https://eprocure.gov.in/eprocure/app) by clicking on the link "Online bidder Enrollment" on the CPP Portal which is free of charge.
2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
3) Bidders are advised to register their valid email addresses and mobile numbers 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 III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / nCode / eMudhra etc.,), with their profile.
5) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.
6) Bidder then logs in to the site through the secured log-in by entering their user ID/password and the password of the DSC / e-Token.

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, Organization 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 Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal.
2) Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved 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 tender, 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 bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

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/JPG formats. Bid documents may be scanned with 100 dpi with black-and white option which helps in reducing the size of the scanned document.

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 certificates, etc.) has been provided to the bidders. Bidders can use the "My Space" or "Other Important Documents" are 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.

   Note: My Documents space is only a repository given to the Bidders to ease the uploading process. If Bidder has uploaded his Documents in My Documents space, this does not automatically ensure these Documents being part of Technical Bid.

SUBMISSION OF BIDS

5) Bidder should log into the site well in advance for bid submission.

6) ion so that they can 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.

7) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.

8) Bidder has to select the payment option as "offline" to pay the tender fee / EMD as applicable and enter details of the instrument.

9) Bidder should prepare the EMD as per the instructions specified in the tender document. The original should be posted/couriered/given in person to the concerned official, latest by the last date and time of bid submission or as specified in the tender documents. The details of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise, the uploaded bid will be rejected.

10) Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard BoQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. 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 and submit it online, without changing the filename. If the BoQ file is found to be modified by the bidder, the bid will be rejected.

11) 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 time during bid submission.

12) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized 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. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid opener's public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.

13) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.

14) Upon the successful and timely submission of bids (i.e., after Clicking "Freeze Bid Submission" in the portal), 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.

15) The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgment may be used as an entry pass for any bid opening meetings.

ASSISTANCE TO BIDDERS

16) Any queries relating to the 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.

17) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact details of the helpdesk are 0120-4711508, 0120-6277787, 0120-4001002, 0120- 4001005 andsupport-eproc@nic.in.

NOTICE INVITING TENDER

NIT No. IITH/CMD/ELE/NIT/2025-26/13

Technical Eligibility Criteria:

1. Bidders shall produce definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, of having satisfactorily completed similar works of magnitude specified below:

   Experience of having successfully completed similar works during the last 07 years ending last day of the month previous to the one in which tenders are invited.

   Three similar completed works each costing not less Rs.1,11,06,983/- only or

   Two similar completed works each costing not less than Rs. 1,66,60,474/- only or

   One similar completed work costing not less than Rs. 2,22,13,966/- only.

   The value of executed works shall be brought to current costing level by enhancing the actual value of work done at the simple rate of 7% per annum, calculated from the date of completion to the last date of submission of tender.

   "Similar work" shall mean the work of Supply, Installation, Testing and Commissioning (SITC) of Internal and External Electrification works or SITC of 11kV or above voltage level Indoor/Outdoor substation equipment's in any Research laboratories/ Educational Institutions/ Universities/Hospitals/Commercial complexes/Municipal corporations/Power Discoms/Data Centres/Banks/PSUs/IT companies/Pharma companies/Sports Stadiums/Any other organizations.

   (For private works TDS certificate or Form-26 AS in support of value of work done.)

2. **Turnover:** Average annual financial turnover on works should be at least **Rs 83,30,237/- only** during the immediate last three consecutive financial years ending 31st March 2025. The value of annual turnover figures shall be brought to current value by enhancing the actual turnover figures at simple rate of 7% per annum. The annual turnover certificate from the chartered accountant need to be enclosed by the bidder.

3. **Profit/Loss :** The bidder should not have incurred any loss (profit after tax should be positive) in more than two years during available last five consecutive balance sheet (balance sheet in case of private/public limited company means its standalone financial statement and consolidated financial statement both), duly audited and certified by the Chartered Accountant.

4. **Banker's Certificate or Net worth Certificate** (as per the prescribed format given in NIT): The bidder shall submit the Banker's certificate or Net-worth certificate as per the below:

   Banker's Certificate of the amount equal to **Rs.1,11,06,983/-** only issued by any scheduled bank, UDIN as per format enclosed as Form-B.

   or

   Net worth certificate of minimum **Rs.27,76,476/-** only issued by certified Chartered Accountant with UDIN as per format enclosed as Form-C.

5. **Bidding Capacity**: The bidder should have bidding capacity equal to or more than Rs.2,77,67,457/- only. The bidding capacity shall be worked out by the following formula:

Bidding Capacity = {[AxNx1.5]-B}

Where,

A = Maximum turnover in any one year during the last seven years taking into account the completed as well as works in progress. The value of completed works shall be brought to the current costing level by enhancing at a simple rate of 7% per annum.

N = Number of years prescribed for completion of work for which bids have been invited.

B = Value of existing commitments and ongoing works to be completed during the period of completion of work for which bids have been invited.

5. The bidder shall submit the **Indemnity bond** as per format provided as **Annexure-II**.

6. The bidder shall submit a valid and applicable **Electrical contractor license of 11 kV or above voltage levels** along with it's bid

7. The bidder shall submit the **Manufacturer Authorization Certificate** from the approved OEM of Compact secondary sub-station (CSS) and from the approved OEM of VRV AC System as per the format enclosed as Annexure-IV.

8. The bidder shall have **Employees Provident Fund (EPF) enlistment** and proof of the same shall be attached along with the Technical Bid clearly showing the Provident Fund Code number.

9. To become eligible, the tenderer shall have to furnish an affidavit as per **Form 'J'** of the NIT.

10. The bidder shall submit the details of **eligible similar nature of works** completed during the last seven years ending previous day of last date of submission of tender as per the format enclosed as **Form-D.**

11. The bidder shall submit the **Performance report of works** as per the format enclosed as **Form-E.**

12. The bidder shall submit the **Acceptance of tender terms & conditions** as per the format enclosed as **Annexure-III.**

13. The bidder shall submit the **Litigation Impact Statement** as per the format enclosed as **Appendix-II.**

14. Agreement shall be drawn with the successful tenderer on prescribed Form which is available in the website: *https://drive.google.com/file/d/19_LkFZ1IeQb_3BznXQtinslcLISYVdbo/view* **(with up to date correction slips/amendments if any in accordance with the CPWD guidelines/GOI orders)** Tenderer shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.

15. The time allowed for carrying out the work will be as stated at para 1 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 tender documents.

16. **The site for the work is available.**

17. Tender documents consisting of plans, specifications, the schedule of quantities of the various classes of work to be done and the set of terms & conditions of contract to be complied with by the contractor whose tender may be accepted, and other necessary documents can be seen for information at the above-mentioned website.

18. Applicants are advised to keep visiting the above-mentioned website from time to time (till the deadline for bid submission) for any updates in respect of the tender documents, if any. Failure to do so shall not absolve the applicant of his liabilities to submit the applications complete in all respects including updates thereof, if any. An incomplete application may be liable for rejection.

19. The contractor whose tender is accepted, will be required to furnish a **Performance Guarantee of 5% (Five Percent)** of the tendered 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's cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay order of any scheduled bank or Fixed Deposit Receipts or 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 the contractor.

20. The description of the work is as follows:

Construction of Centre of Excellence for Centre of Clean Coal Energy & Net Zero (CLEANZ) facility at IIT Hyderabad.

Sub Head: Internal & External Electro-Mechanical Works for CLEANZ Facility.

The bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (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 tender. A tenderer 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 tenderer 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 tender by a tenderer 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.

21. Tenders with any condition including that of conditional rebates shall be rejected forthwith.

22. Cost of **Bid document cost** and **EMD** may also be remitted to Institute's account number as per bank particulars given below:

Name of the Account Holder	**: Indian Institute of Technology Hyderabad**
Account Number	**: 30412797764 (Current Account)**
Name of the Bank	**: State Bank of India**
Address of the Bank	**: IIT Kandi, IIT Hyderabad Campus, Kandi, Sangareddy, Telangana - 502284**
Branch code	**:14182**
IFSC code	**: SBIN0014182**
MICR code	**502002528**
SHIFT code	**: SBININBB762**

23. The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other tender and reserves to itself the authority to reject any or all the tenders received without the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the tenderershall be summarily rejected.

24. Canvassing whether directly or indirectly, in connection with tenderers is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.

25. The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rate quoted.

26. The contractor shall not be permitted to tender for works if 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). Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Institute.

27. No Engineer of gazette 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 previous permission of the Government of India in writing. This contract is 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 tender or engagement in the contractor's service.

28. The tender for the works shall remain open for acceptance for a period of Ninety (90) days from the date of opening of tenders/Sixty days from the date of opening of financial bid in case tenders are invited on 2/3 envelop system (strike out as the case may be) if any tenderer withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the department, then the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the tenderer shall not be allowed to participate in the retendering process of the work.

29. **(A) All taxes, Labor Cess etc., as applicable shall be borne by the contractor himself. The contractor shall quote his rates considering all such taxes including GST on works. Any recovery towards GST is notified by the competent authority, the same shall be effected and no claim what so ever shall be entertained by IITH. The contractor shall quote his rates accordingly.**
(B) 2% as TDS amount of GST amount payable on the bills will be deducted as per the Govt. of India, Ministry of Finance, Department of Revenue notification vide No.65/39/2018-DOR, dtd: 14-09-2018.

30. ***GST registration certificate 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 under taking along with other bid documents.

"If the work 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 Hyderabad, whichever earlier, failing which I/We shall 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 Hyderabad or GST department in this regard."

31. This notice inviting Tender shall form a part of the contract document. The successful tenderer/contractor, on acceptance of his tender by the Accepting Authority shall within 15 days from the stipulated date of start of the work, sign the contract consisting of :-

a) The Notice Inviting Tender, all the documents including additional conditions, specifications and drawings, if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leadingthereto.

b) Standard Contract form (General Conditions of Contract) as posted in the website of the Institute. The bidder is deemed to have gone through and understood the Standard Contract Form and the General Conditions of Contract.

Executive Engineer-Electrical
IIT Hyderabad

(Signature of bidder)

1. EVALUATION METHODOLOGY:

The Procurement Process:

The activities leading to the procurement of the services of the well-established, experienced and innovative companies/contractors for the **Construction of Centre of Excellence for Centre of Clean Coal Energy & Net Zero (CLEANZ) facility at IIT Hyderabad. Sub Head: Internal & External Electro-Mechanical Works for CLEANZ Facility.**will consist of the following key activities:

1. Invitation for Tender: The IIT Hyderabad invites intending bidders to submit the bids for consideration in the subsequent tendering process for selection of well-established, experienced and innovative company/firm for the **Construction of Centre of Excellence for Centre of Clean Coal Energy & Net Zero (CLEANZ) facility at IIT Hyderabad. Sub Head: Internal & External Electro-Mechanical Works for CLEANZ Facility.** A Notice inviting Tender will be published in the Central Public Procurement Portal (CPP Portal) of Govt. of India (**www.eprocure.gov.in**) and also will be uploaded on the IIT Hyderabad website (**www.iith.ac.in**), as per the standard procedure of IITH. This document with key details of the project and response formats is available for all potential and interested bidders through aforesaid websites.

2. Receipt of bids: The bids from the potential bidders who are interested in participating in the selection process will be received in online mode, on a designated date and time as specified in this document.

3. Evaluation of bids: The information provided by the potential bidders in their bids, as part of the response to this tender will be evaluated against the eligibility criteria specified in the tender to qualify for the subsequent processes of selection. Based on this evaluation, the potential bidders who meet the qualifying (eligibility) criteria will be shortlisted.
The eligibility conditions have been formulated to assess the competence and capability of the potential bidding firms to meet the requirements of IIT Hyderabad for providing the required services.

The financial bids of the above-shortlisted cum technically qualified bidders as per the above criteria will be opened at the designated date and time and accordingly evaluated further for award of work to the successful eligible bidder.

3.1 RIGHT TO TERMINATE THE PROCESS:

• IIT Hyderabad makes no commitments, explicit or implicit, that this process will result in a business transaction with anyone.

• This NIT does not constitute any offer by IIT Hyderabad. The bidder's participation in this process may result in IIT Hyderabad selecting the bidders to engage in further responses, discussions and negotiations towards execution of a final contract. The commencement of any subsequent procurement activity resulting out of this NIT does not signify a commitment by IIT Hyderabad either to continue the activities or to culminate such activities with a definitive contract.

• IIT Hyderabad reserves the right to withdraw this tender if it determines that such action is in the best interest of the organization without assigning any reason whatsoever.

3.2 Authenticity of the Information and Right for Verification:

• IITH reserves the right to verify all statements, information and documents submitted by the potential bidder in response to the NIT. Any such verification or lack of such verification by the IIT Hyderabad shall not relieve the bidder of its obligations or liabilities hereunder nor will it affect any rights of the IITH thereunder.

• In case it is found during the evaluation of the responses or at any time during the subsequent procurement process or before signing of the contract or after its execution and during the period of project execution resulting out of the contract thereof, that one or more of the pre-qualification conditions have not been met by the bidder, or the bidder has made material misrepresentation or has given any materially incorrect or false information, the bidder shall be disqualified forthwith if not yet awarded the contract either by issue of the letter of intent or entering into a contract.

3.3 Additional Conditions:

- Timing and sequence of events resulting from this tender shall be as determined by IITH.
- Responses are subject to rejection if they limit or modify any of the terms and conditions or specifications of this tender.
- Neither the bidder nor any of bidder's representatives shall have any claims whatsoever against IITH or any of its respective officials, agents, or employees arising out of or relating to this NIT or these procedures (other than those arising under a definitive service agreement with the bidder in accordance with the terms thereof).

- The Bidder shall not bid under any Consortium or Joint Ventures. Bids from a Consortium/Joint venture shall be summarily rejected.

- The bidder should not be under a declaration of ineligibility for corrupt and fraudulent practices issued by Government of India or any State Governments in the country of India.

- The bidder must not have any history of defaulting in execution of work orders issued by Government of India or any State Government in the country of India. A self-declaration certificate to this effect should be enclosed.

- The bidder hasn't been blacklisted by any Central/State Government institution and there has been no pending litigation with any government department on account of similar services.

- No Criminal Proceedings in any Court of Law should pending against the bidding Firm Or its Promoters Or its Directors Or its Executives.

2.GENERAL TECHNICAL REQUIREMENTS

2.1 INTRODUCTION

This part covers technical requirements which will form an integral part of the Contract. The following provisions shall supplement all the detailed technical requirements brought out in the Technical Specifications and the Technical Data Sheets.

2.2 COMPLETENESS OF FACILITIES

a. Each of the plant shall be engineered and designed in accordance with the specification requirement and as per relevant standards.

b. All equipment furnished by the Contractor shall be complete in every respect, with all mountings, fittings, fixtures and standard accessories normally provided with such equipment and/or those needed for erection, completion and safe operation & maintenance of the equipment and for the safety of the operating personnel, as required by applicable codes, though they may not have been specifically detailed in the respective specifications, unless included in the list of exclusions.

2.3 CODES & STANDARDS

a. In addition to the codes and standards specifically mentioned in the relevant technical specifications for the equipment/ plant/ system, all equipment parts, systems and works covered under this specification shall comply with all currently applicable statutory regulations and safety codes of the Republic of India as well as of the locality where the project will be installed, including the following:

(a.) Bureau of Indian Standards (BIS)
(b.) Central electricity act
(c.) Indian Factories Act and State Factories Act
(d.) Rules for Electrical installation by Tariff Advisory Committee (TAC).
(e.) Any other statutory codes / standards / regulations, as may be applicable.

b. Unless covered otherwise by Indian codes & standards and in case nothing to the contrary is specifically mentioned elsewhere in the specifications, the latest editions (as applicable as on date of bid opening), of the codes and standards given below shall also apply:

(a.) American National Standards Institute (ANSI) / IEEE
(b) American Society of Testing and Materials (ASTM)
(c.) American Society of Mechanical Engineers (ASME)
(d.) International Organisation for Standardization (ISO)
(e) National Electrical Manufacturers Association (NEMA)
(f.) National Fire Protection Association (NFPA)
(g.) International Electro-Technical Commission (IEC)

c. Other International/ National standards such as DIN, VDI, BS, GOST etc. shall also be accepted for only material codes and manufacturing standards, subject to the Purchaser's approval, for which the Bidder shall furnish, along with the offer, adequate information to justify that these standards are equivalent or superior to the standards mentioned above. In all such cases the Bidder shall furnish specifically the variations and deviations from the standards mentioned elsewhere in the specification together with the complete word to word translation of the standard that is normally not published in English.

d. In the event of any conflict between the codes and standards referred to in the above clauses and the requirement of this specification, the requirement of Technical Specification shall govern.

e. In case of any change in codes, standards & regulations between the date of bid opening and the date when vendors proceed with fabrication, the IITH shall have the option to incorporate the changed requirements or to retain the original standard. It shall be the responsibility of the Contractor to bring to the notice of the IITH such changes and advise IITH of the resulting effect.

2.4 EQUIPMENT FUNCTIONAL GUARANTEE

a. The functional guarantees of the equipment under the scope of the Contractors given elsewhere in the technical specification. These guarantees shall supplement the general functional guarantee provisions covered under General Conditions of Contract.

2.5DESIGN OF FACILITIES/ MAINTENANCE & AVAILABILITY CONSIDERATIONS

2.5.1 Design of Facilities

I. All the design procedures, systems and components proposed shall have already been adequately developed and shall have demonstrated good reliability under similar conditions elsewhere.

II. The Contractor shall be responsible for the selection and design of appropriate equipment to provide the best co-ordinated performance of the entire system. The basic requirements are detailed out in various clauses of the Technical Specifications. The design of various components, assemblies and subassemblies shall be done so that it facilitates easy field assembly and dismantling. All the rotating components shall be so selected that the natural frequency of the complete unit is not critical or close to the operating range of the unit.

2.5.2 Maintenance and Availability Considerations

I. Equipment/facilities offered shall be designed for high availability, low maintenance and ease of maintenance. The Bidder shall specifically state the design features incorporated to achieve high degree of reliability/ availability and ease of maintenance. The Bidder shall also furnish details of availability records in the reference plants stated in his experience list.

II. Bidder shall state in his offer the various maintenance intervals, spare parts and man-hour requirement during such operation. The intervals for each type of maintenance namely the minor and major overhauls shall be specified in terms of fired hours, clearly defining the spare parts and manhour requirement for each stage.

III. Lifting devices i.e. hoists and chain pulley jacks, etc. shall be provided by the contractor for handling of any equipment or any of its part having weight in excess of 500 kgs during erection and maintenance activities.

IV. Lifting devices like cranes/lifting tackles, slings, etc. to be connected to hook of the hoist / crane shall be provided by the contractor for lifting the equipment and accessories covered under the specification.

2.6 Documents to be furnished

a. Each of the plant and equipment shall be fully integrated, engineered and designed to perform in accordance with the technical specification. All engineering and technical services required ensuring a completely engineered plant shall be provided in respect of mechanical, electrical, control & instrumentation, civil & structural works as per the scope.

b. The Contractor shall furnish engineering data/drgs. for entire equipment covered under this specification in accordance with the schedule of information as specified in Technical Specification and Data sheets. Apart from this, following documents also to be submitted:

2.7 INSTRUCTION MANUALS

The Contractor shall submit to the IITH, draft Instruction Manuals for all the equipment covered under the Contract by the end of one year from the date of his acceptance of the Letter of Award. The Instruction manuals shall contain full details required for erection, commissioning, operation and maintenance of each equipment. The manual shall be specifically compiled for this project. After finalization and approval of the IITH the Instruction Manuals shall be submitted. The Contract shall not be considered to be completed for purposes of taking over until the final Instructions manuals have been supplied to the IITH. The Instruction Manuals shall comprise of the following.

2.7.1 ERECTION &COMMISSIONING MANUALS/CHECKLISTS

The erection & Commissioning Manuals/Checklists shall be submitted at least two (2) months prior to the commencement of erection activities of particular equipment/system. The erection manual should contain the following as a minimum.

a) Erection strategy.
b) Sequence of erection.
c)Erection instructions.
d)Critical checks and permissible deviation/tolerances.
e) List of tools, tackles, heavy equipment like cranes, dozers, etc.
f) Bill of Materials
g) Procedure for erection.
h)General safety procedures to followed during erection/installation.
i)Procedure for initial checking after erection.
j)Procedure for testing and acceptance norms.
k)Procedure / Check list for pre-commissioning activities.
l)Procedure / Check list for commissioning of the system.
m)Safety precautions to be followed during erection and commissioning

2.7.2 OPERATION & MAINTENANCE MANUALS

I. The operating and maintenance instructions together with drawings (other than shop drawings) of the equipment, as completed, shall be in sufficient detail to enable the IITH to operate, maintain, dismantle, reassemble and adjust all parts of the equipment. They shall give a step by step procedure for all operations likely to be carried out during the life of the plant / equipment including, operation, maintenance, dismantling and repair including periodical activities such as chemical cleaning of the generator. Each manual shall also include a complete set of drawings together with performance/rating curves of the equipment and test certificates wherever applicable. The contract shall not be considered to be completed for purposes for taking over until these manuals have been supplied to the IITH.

II. If after the commissioning and initial operation of the plant, the manuals require any modification / additions / changes, the same shall be incorporated and the updated final instruction manuals shall be submitted to the IITH for records.

III. A separate section of the manual shall be for each size/ type of equipment and shall contain a detailed description of construction and operation, together with all relevant pamphlets and drawings.

IV. The manuals shall include the following :

a. List of spare parts along with their drawing and catalogues and procedure for ordering spares.
b. Where applicable, fault location charts shall be included to facilitate finding the cause of maloperation or break down.
c. Detailed specifications for all the consumable

2.7.3 PROJECT COMPLETION REPORT

The Contractor shall submit a Project Completion Report at the time of handing over the project. After final acceptance of individual equipment /system by the IITH, the Contractor will update all original drawings and documents for the equipment/ system to "as built" conditions and submit.

2.7.4 ENGINEERING INFORMATION SUBMISSION SCHEDULE

Prior to the award of Contract, a Detailed Engineering Information Submission Schedule shall be tied up with the IITH. For this, the bidder shall furnish a detailed list of engineering information along with the proposed submission schedule. This list would be a comprehensive one including all engineering data / drawings / information for all bought out items and manufactured items. The information shall be categorized into the following parts.

a. Information that shall be submitted for the approval of the IITH before proceeding further, and
b. Information that would be submitted for IITH's information only. The Engineering Information Schedule shall be updated month-wise. The schedule should allow adequate time for proper review and incorporation of changes/ modifications, if any, to meet the contract without affecting the equipment delivery schedule and overall project schedule. The early submission of drawings and data is as important as the manufacture and delivery of equipment and hardware and this shall be duly considered while determining the overall performance and progress.

2.7.5 ENGINEERING PROGRESS AND EXCEPTION REPORT

Report giving the status of each engineering information including

a. A list of drawings/engineering information which remains unapproved for more than four (4) weeks after the date of first submission
b. Drawings which were not submitted as per agreed schedule. The draft format for this report shall be furnished to the IITH within four (4) weeks of the award of the contract, which shall then be discussed and finalized with the IITH.

2.8 TECHNICAL CO-ORDINATION MEETING

The Contractor shall organize and attend at least one monthly progress meetings with the IITH representatives during the period of Contract at mutually agreed venues for review of progress & resolving technical clarifications, if any. The Contractor shall attend such meetings at his own cost and fully co-operate with such persons and agencies involved during the discussions.

The Contractor shall ensure availability of the concerned experts/consultants/ personnel who are empowered to take necessary decisions during these meetings. The Contractor shall be equipped with necessary tools and facilities so that, if required, the drawings/documents can be resubmitted after incorporating necessary changes and approved during the meeting itself.

•The Contractor shall furnish monthly progress report to the IITH detailing out the progress achieved on all erection activities as compared to the schedules. The report shall also indicate the reasons for the variance between the scheduled and actual progress and the action proposed for corrective measures, wherever necessary.

2.9 MATERIAL OF CONSTRUCTION

All materials used for the construction of the equipment shall be new and shall be in accordance with the requirement's of this specification. Materials utilised for various components shall be those which have established themselves for use in such applications.

2.9.1 RATING PLATES, NAME PLATES & LABELS

a. Each main and auxiliary item of plant including instruments shall have permanently attached to it in a conspicuous position, a rating plate of non-corrosive material upon which shall be engraved manufacturer's name, equipment, type or serial number together with details of the ratings, service conditions under which the item of plant in question has been designed to operate, and such diagram plates as may be required by the IITH.

b. Such nameplates or labels shall be of white non-hygroscopic material with engraved black lettering or alternately, in the case of indoor circuit breakers, starters, etc. of transparent plastic material with suitably coloured lettering engraved on the back. The name plates shall be suitably fixed on both front and rear sides.

c. Hanger/ support numbers shall be marked on all pipe supports, anchors, hangers, snubbers and restraint assemblies. Each constant and variable spring support shall also have stamped upon it the designed hot and cold load which it is intended to support. Suitable scale shall also be provided to indicate load on support/hanger.

d. Nameplates shall be as per best practices of the industry

e. All segregated phases of conductors or bus ducts, indoor or outdoor, shall be provided with coloured phase plates to clearly identify the phase of the system

2.10 TOOLS AND TACKLES

The Contractor shall supply with the equipment one complete set of all special tools and tackles and other instruments required for the erection, assembly, disassembly and proper maintenance of the plant and equipment and systems (including software). These special tools will also include special material handling equipment, jigs and fixtures for maintenance and calibration / readjustment, checking and measurement aids etc. A list of such tools and tackles shall be submitted by the Bidder along with the offer.

The price of each tool / tackle shall be deemed to have been included in the total bid price. These tools and tackles shall be separately packed and sent to site. The Contractor shall also ensure that these tools and tackles are not used by him during erection, commissioning and initial operation. For this period the Contractor should bring his own tools and tackles. All the tools and tackles shall be of reputed make acceptable to the IITH.

2.11 WELDING

If the manufacturer has special requirements relating to the welding procedures for welds at the terminals of the equipment to be per formed by others the requirements shall be submitted to the IITH in advance of commencement of erection work.

2.12 GENERAL REQUIREMENTS -QUALITY ASSURANCE

a. All materials, components and equipment covered under this specification shall be procured, manufactured, erected, commissioned and tested at all he stages, as per a comprehensive Quality Assurance Program. An indicative program of inspection/tests to be carried out by the contractor for some of the major items is given in the respective technical specification. This is, however, not intended to form a comprehensive program as it is the contractor's responsibility to draw up and implement such program duly approved by the IITH.T he detailed Quality Plans for manufacturing and field activities shall be drawn up by the Bidder and will be submitted to IITH for approval.

b. Manufacturing Quality Plan will detail out for all the components and equipment, various tests/inspection, to be carried out as per the requirements of this specification and standards mentioned therein and qualitypracticesandproceduresfollowedbyContractor's/Sub-contractor's/sub-supplier's Quality Control Organisation, the relevant reference documents and standards, acceptance norms, inspection documents raised etc., during all stages of materials procurement, manufacture, assembly and final testing/performance testing. The Quality Plan shall be submitted on electronic media in addition to hard copy, for review and approval.

c. Field Quality Plans will detail out for all the equipment, the quality practices and procedures etc. to be followed by the Contractor's "Site Quality Control Organization", during various stages of site activities starting from receipt of materials/equipment at site.

d. The Bidder shall also furnish copies of the reference documents/plant standards/acceptance norms/tests and inspection procedure etc., as referred in Quality Plans along with Quality Plans. These Quality Plans and reference documents/standards etc. will be subject to IITH's approval without which manufacturer shall not proceed. These approved documents shall form a part of the contract. In these approved Quality Plans, IITH shall identify customer hold points (CHP),i.e. test/checks which shall be carried out in presence of the IITH's EIC or his authorized representative and beyond which the work will not proceed without consent of IITH in writing. All deviations to this specification, approved quality plans and applicable standards must be documented and referred to IITH along with technical justification for approval and dispositioning.

e. No material shall be dispatched from the manufacturer's works before the same is accepted, subsequent to pre-dispatch final inspection including verification of records of all previous tests/inspections by IITH All material used for equipment manufacture including casting and forging etc. shall be of tested quality as per relevant codes/standards. Details of results of the tests conducted to determine the mechanical properties; chemical analysis and details of heat treatment procedure recommended and actually followed shall be recorded on certificates and time temperature chart. Tests shall be carried out as per applicable material standards and/or agreed details.

f. All welding and brazing shall be carried out as per procedure drawn and qualified in accordance with requirements of ASME Section IX/BS-4870 or other International equivalent standard acceptable to the IITH.

g. All welding/brazing procedures shall be submitted to the IITH or its authorized representative for approval prior to carrying out the welding/brazing.

h. All brazers, welders and welding operators employed on any part of the contract either in Contractor's/sub-contractor's works or at site or elsewhere shall be qualified as per ASME Section-IX or BS-4871 or other equivalent International Standards acceptable to the IITH.

i. Welding procedure qualification & Welder qualification test results shall be furnished to the IITH for approval. However, where required by the IITH, tests shall be conducted in presence of IITH / authorised representative.

j. Unless otherwise proven and specifically agreed with the IITH, welding of dissimilar materials and high alloy materials shall be carried out at shop only.
k. No welding shall be carried out on cast iron components for repair.

l. The Contractor shall list out all major items/ equipment/ components to be manufactured in house as well as procured from sub-contractors (BOI). All the sub-contractor proposed by the Contractor for procurement of major bought out items including castings, forging, semi-finished and finished components/equipment etc., list of which shall be drawn up by the Contractor and finalised with the IITH, shall be subject to IITH's approval

m. For components/equipment procured by the contractors for the purpose of the contract, after obtaining the written approval of the IITH, the contractor's purchase specifications and inquiries shall call for quality plans to be submitted by the suppliers. The quality plans called for from the sub-contractor shall set out, during the various stages of manufacture and installation, the quality practices and procedures followed by the vendor's quality control organization, the relevant reference documents/standards used, acceptance level, inspection of documentation raised, etc. Such quality plans of the successful vendors shall be finalized with the IITH and such approved Quality Plans shall form a part of the purchase order/contract between the Contractor and sub-contractor. Within three weeks of the release of the purchase orders /contracts for such bought out items /components, a copy of the same without price details but together with the detailed purchase specifications, quality plans and delivery conditions shall be furnished to the IITH on the monthly basis by the Contractor along with a report of the Purchase Order placed so far for the contract.

n. IITH reserves the right to carry out quality audit and quality surveillance of the systems and procedures of the Contractor's or their sub-contractor's quality management and control activities. The contractor shall provide all necessary assistance to enable the IITH carry out such audit and surveillance.

o. The contractor shall carry out an inspection and testing programme during manufacture in his work and that of his sub-contractor's and at site to ensure the mechanical accuracy of components, compliance with drawings, conformance to functional and performance requirements, identity and acceptability of all materials parts and equipment. Contractor shall carry out all tests/inspection required to establish that the items/equipment conform to requirements of the specification and the relevant codes/standards specified in the specification, in addition to carrying out tests as per the approved quality plan.

p. Quality audit/surveillance/approval of the results of the tests and inspection will not, however, prejudice the right of the IITH to reject the equipment if it does not comply with the specification when erected or does not give complete satisfaction in service and the above shall in no way limit the liabilities and responsibilities of the Contractor in ensuring complete conformance of the materials/equipment supplied to relevant specification, standard, data sheets, drawings, etc.

q. For all spares and replacement items, the quality requirements as agreed for the main equipment supply shall be applicable.

r. Repair/rectification procedures to be adopted to make the job acceptable shall be subject to the approval of the IITH/ authorized representative.

2.12.1 SAMPLING AND TESTING OF CONSTRUCTION MATERIALS

The method of sampling for testing of construction materials and work / job samples shall be as per the relevant IS / standards / codes and in line with the requirements of the technical specifications / quality plans. All samples shall be jointly drawn, signed and sealed wherever required, by the contractor and the engineer or his authorized representative.

The contractor shall carry out testing in accordance with the relevant IS / standards / codes and in line with the requirements of the technical specifications / quality plans. Where no specific testing procedure is mentioned, the tests shall be carried out as per the best prevalent engineering practices and to the directions of the Engineer-In-Charge. All testing shall be done in the presence of the Engineer-In-Charge or his authorized representative in a NABL accredited / Govt. Laboratory acceptable to IITH. This includes all IITs, NCB, CSMRS, reputed government / autonomous laboratories / organizations, NITs and other reputed testing laboratories. The test samples for such test shall be jointly selected and sealed by the Engineer-In-Charge and thereafter these shall be sent to the concerned laboratory through the covering letter signed by IITH Engineer. The test report along with the recommendations shall be obtained from the laboratories without delay and submitted to IITH.

2.12.2 DOCUMENTATION PACKAGE

The Contractor shall be required to submit the QA Documentation in two hard copies and a soft copy, as identified in respective quality plan with tick mark. Each QA Documentation shall have a project specific Cover Sheet bearing name & identification number of equipment and including an index of its contents with page control on each document.

The QA Documentation file shall be progressively completed by the Supplier's sub- supplier to allow regular reviews by all parties during the manufacturing.

2.13ENGINEER IN CHARGE (IITH) SUPERVISION

To eliminate delays and avoid disputes and litigation, it is agreed between the parties to the Contract that all matters and questions shall be referred to the EIC and without prejudice to the provisions of 'Arbitration' clause in Section GCC , the Contractor shall proceed to comply with the EIC's decision.

The work shall be performed under the supervision of the EIC or his authorised representative. The scope of the duties of the EIC pursuant to the Contract, will include but not be limited to the following:

(a.) Interpretation of all the terms and conditions of these documents and specifications:
(b.) Review and interpretation of all the Contractor's drawing, engineering data, etc:
(c.) Witness or his authorised representative to witness tests and trials either at the manufacturer's works or at site, or at any place where work is performed under the contract :
(d.) Inspect, accept or reject any equipment, material and work under The contract :
(e.) Issue certificate of acceptance and/or progressive payment and final payment certificates
(f.) Review and suggest modifications and improvement in completion schedules from time to time, and
(g.) Supervise Quality Assurance Programme implementation at all stages of the works.

2.14INSPECTION, TESTING AND INSPECTION CERTIFICATES

a. The word 'Inspector' shall mean the EIC from IITH and/or his authorised representative and/or an outside inspection agency acting on behalf of the IITH to inspect and examine the materials and workmanship of the works during its manufacture or erection.

b. The EIC or his duly authorised representative and/or an outside inspection agency acting on behalf of the IITH shall have access at all reasonable times to inspect and examine the materials and workmanship of the works during its manufacture or erection and if part of the works is being manufactured or assembled on other premises or works, the Contractor shall obtain permission for the EIC and for his duly authorised representative to inspect as if the works were manufactured or assembled on the Contractor's own premises or works.

c. The Contractor shall give the EIC /Inspector fifteen (15) days written notice of any material being ready for testing. Such tests shall be to the Contractor's account except for the expenses of the Inspector's. The EIC/Inspector, unless the witnessing of the tests is virtually waived and confirmed in writing, will attend such tests within fifteen (15) days of the date on which the equipment is noticed as being ready for test/inspection failing which the contractor may proceed with test which shall be deemed to have been made in the inspector's presence and he shall forthwith forward to the inspector duly certified copies of test reports in two (2) copies.

d. The EIC or Inspector shall within fifteen (15) days from the date of inspection as defined herein give notice in writing to the Contractor, or any objection to any drawings and all or any equipment and workmanship which is in his opinion not in accordance with the contract. The Contractor shall give due consideration to such objections and shall either make modifications that may be necessary to meet the said objections or shall inform in writing to the EIC/Inspector giving reasons therein, that no modifications are necessary to comply with the contract.

e. When the factory tests have been completed at the Contractor's or sub-contractor's works, the EIC /Inspector shall issue a certificate to this effect fifteen (15) days after completion of tests but if the tests are not witnessed by the EIC /Inspectors, the certificate shall be issued within fifteen (15) days of the receipt of the Contractor's test certificate by the EIC /Inspector. EIC /Inspector to issue such a certificate shall not prevent the Contractor from proceeding with the works. The completion of these tests or the issue of the certificates shall not bind the IITH to accept the equipment should it, on further tests after erection be found not to comply with the contract.

f. In all cases where the contract provides for tests whether at the premises or works of the Contractor or any sub-contractor, the Contractor, except where otherwise specified shall provide free of charge such items as labour, material, electricity, fuel, water, stores, apparatus and instruments as may be reasonably demanded by the EIC /Inspector or his authorised representatives to carry out effectively such tests on the equipment in accordance with the Contractor and shall give facilities to the EIC/Inspector or to his authorized representative to accomplish testing.

g. The inspection by EIC / Inspector and issue of Inspection Certificate thereon shall in no way limit the liabilities and responsibilities of the Contractor in respect of the agreed Quality Assurance Programme forming a part of the contract.

h. To facilitate advance planning of inspection in addition to giving inspection notice as specified at clause no 9.05.03- of this chapter, the Contractor shall furnish quarterly inspection programme indicating schedule dates of inspection at Customer Hold Point and final inspection stages. Updated quarterly inspection plans will be made for each three consecutive months and shall be furnished before beginning of each calendar month.

i. All inspection, measuring and test equipment used by contractor shall be calibrated periodically depending on its use and criticality of the test/measurement to be done. The Contractor shall maintain all the relevant records of periodic calibration and instrument identification, and shall produce the same for inspection by IITH. Wherever asked specifically, the contractor shall re-calibrate the measuring/test equipment in the presence of EIC / Inspector.

2.15 PRE-COMMISSIONING AND COMMISSIONING FACILITIES

The Contractor up on completion of installation of equipment and systems, shall conduct pre-commissioning and commissioning activities, to make the equipment/systems ready for safe, reliable and efficient operation on sustained basis. During commissioning the Contractor shall carry out system checking and reliability trials on various parts of the facilities. All pre-commissioning/commissioning activities considered essential for such readiness of the equipment/systems including those mutually agreed and included in the Contractor's quality assurance programme as well as those indicated in clauses elsewhere in the technical specifications shall be performed by the contractor.

The pre-commissioning and commissioning activities of the equipment/systems furnished and installed by the contractor shall be the responsibility of the Contractor. The Contractor shall provide, in addition, temporary instrumentation and other measuring devices, test instruments, calibrating devices etc. and labour required for successful performance of these operations. If it is anticipated that the above test may prolong for a long time, the Contractor's workmen required for the above test shall always be present at site during such operations. All erection & commissioning checks shall be as per manufacturer's manual on mutually agreed terms.

(a) As soon as the facilities or part thereof has been completed operationally and structurally and before start-up, each item of the equipment and systems forming part of facilities shall be thoroughly cleaned and then inspected jointly by the IITH and the Contractor for correctness of and completeness of facility or part thereof and acceptability for initial pre-commissioning tests, commissioning and start-up at Site. The list of pre-commissioning tests to be performed shall be as mutually agreed and included in the Contractor's quality assurance programme as well as those included elsewhere in the Technical Specifications.
(b) The Contractor's pre-commissioning/ commissioning/start-up engineers, specially identified as far as possible, shall be responsible for carrying out all the pre-commissioning tests at Site. On completion of inspection, checking and after the pre-commissioning tests are satisfactorily over, the commissioning of the complete facilities shall be commenced during which period the complete facilities, equipment shall be operated integral with sub-systems and supporting equipment as a complete plant.
(c) The time consumed in the inspection and checking of the units shall be considered as a part of the erection and installation period.
(d) The check outs during the pre-commissioning period should be programmed to follow the construction completion schedule. Each equipment/system, as it is completed in construction and turned over for commissioning(start-up), should be checked out and cleaned. The checking and inspection of individual systems should then follow a prescribed commissioning documentation [SCL (Standard Check List) / TS (Testing Schedule) / CS (Commissioning Schedule)] to be furnished by the manufacturer/supplier.
(e) The Contractor shall conduct vibration testing to determine the 'base line' of performance of all plant rotating equipment. These tests shall be conducted when the equipment is running at the base load, peak load as well as lowest sustained operating condition as far as practicable.

2.16 PACKAGING AND TRANSPORTATION

All the equipment shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection. While packing all the materials, the limitation from the point of view of the sizes of railway wagons available in India should be taken account of. The Contractor shall be responsible for any loss or damage during transportation, handling and storage due to improper packing. The IITH's Inspector shall have right to insist for completion of works in shops before dispatch of materials for transportation.

3. DRAWINGS & DOCUMENTS

DRAWINGS / DOCUMENTS TO BE SUBMITED

The Contractor shall submit 3copies of draft/ preliminary drawing / report enumerated below and in Various other sections of the specifications for approval of IITH during detailed engineering. Finally, the Contractor shall submit six number of hard copies of each drawing "As approved" along with soft copy in a pen drive.

LIST OF DRAWINGS / DOCUMENTS

Sr. No.	Drawing / document description
1.	Design Basis Report for the Project
2.	Layout and details of Compact Secondary Substation (CSS) foundation.
3.	Single Line Diagram for Compact Secondary Substation (CSS)
4.	Drawing for cable routing.
5.	Drawings for protection system
6.	Drawing for auxiliary power supply distribution
7.	Schematic diagram, Wiring diagram, Internal layouts etc. for switch gear, distribution board, panels, PCU / Inverters etc..
8.	Instruction manuals
9.	Erection & commissioning manuals/checklists
10.	Operation & maintenance manuals
11.	Any other drawing / document required by IITH for clear understanding

a. The drawings shall show sufficient overall dimensions, clearances and space requirements of all apparatus to be furnished.
b. The IITH shall convey his approval or otherwise of the same, and in the event of disapproving the drawing, the Contractor shall re-submit the revised drawings with proper "revision number" for approval after making necessary modification / correction.
c. No extension of time shall be allowed on account of the time consumed in submission and examination of defective drawings and resubmission of the corrected drawings.

4. QUALITY ASSURANCE, INSPECTION & TESTING

The detailed item-wise quality assurance and inspection plan for supply and field jobs shall be submitted by successful bidder after award of contract for the approval of IITH. However indicative and minimum requirement for the measure items has covered under this chapter.

The data sheet submitted by the bidder for measure items shall only for information and understanding of the tender. However, finalisation of all items shall be carried out after award of work to successful bidder on the basis of detailed specification, quality plans etc. On that basis BOM shall be finalised. The contactor has to supply all the material as per approved BOM.

Following major equipment / BOIs will be inspected and routine tested (as per relevant IEC / IS) in line with corresponding MQPs (Manufacturing Quality Plan), MQP will be mutually discussed and agreed with the successful bidder. The cost of test will be deemed to be included in the cost of the equipment.

A. LT and HT cables
B. Compact Secondary Substation (CSS)
C. LT and HT Switchgear
D. Lightning system and other miscellaneous

The word "Inspector" shall mean the EIC and/or his authorized representative and/or an outside inspection agency acting on behalf of the IITH.

5. LIST OF APPROVED MAKES FOR VITAL ITEMS

The contactor shall strictly supply only the following approved make list of items as specified below;

SR. NO	MATERIAL / ITEMS	APPROVED MAKE
1	DRY TYPE TRANSFORMER	CGL/ALSTOM /EMCO / VOLTAMP/ RAYCHEM/ SIEMENS /ABB – HITACHI/ SCHNEIDER- ELECTRIC/ TOSHIBA/UNIVERSAL TRANSFORMERS (UNIMAG)/ MAKPOWER TRANSFORMERS/ KOTSONS/GUJARAT TRANSFORMERS/CENTURY TRANSFORMERS/DANISH TRANSFORMERS
2	11KV COMPACT SECONDARY SUBSTATION (CSS)	ABB/SIEMENS/SCHNEIDER ELECTRIC/ L&T/ALSTOM/ TOSHIBA/VOLTAMP
3	HT/LT SWITCHGEAR	SCHNEIDER ELECTRIC/SIEMENS/ ABB/ L&T/ALSTOM
4	POWER AND CONTROL CABLES	UCL/CCI /FINOLEX /POLYCAB /NICCO/ HAVELLS/KEC
5	CIRCUIT BREAKER (HT / LT)	BHEL/SIEMENS/ABB/SCHNEIDER/GE
6	PROTECTION RELAY FOR SWITCHGEAR (Numeric type only)	ABB/ALSTOM/ SCHNEIDER ELECTRIC/ L&T/SIEMENS
7	METER	AEP/IMP/MECO/AE/L&T/SECURE
8	CABLE LUGS	COMET/ COSMOS/ DOWELL'S (BILLER INDIA) / JAINSON
9	CABLE GLANDS (DOUBLE COMPRESSION)	COMET /COSMOS/ DOWELL'S /JAINSON
10	HT AND LT PANEL BOARDS	CPRI APPROVED SYSTEM INTEGRATORS & PANEL MANUFACTURERS
11	PUSH BUTTONS	ABB/ L&T/ SCHNEIDER-ELECTRIC/ RISHABH
12	MULTIFUNCTION METERS	CONZERV/ RISHAB/ ELMEASURE/SECURE
13	PROTECTION CT	ECS/ERICON/VIDYUT
14	METERING CT	ECS/ERICON/PRAGATI
15	METERING PT	ECS/ERICON/PRAGATI
16	INDICATING LAMPS	L&T/ SIEMENS/ SCHNEIDER ELECTRIC/ ABB, RASS CONTROL/TEKNIC
17	CABLE LUGS	COMET/ COSMOS/ DOWELL'S (BILLER INDIA) / JAINSON
18	CABLE GLANDS (DOUBLE COMPRESSION)	COMET /COSMOS/ DOWELL'S /JAINSON

19	MCB /RCCB	LEGRAND/HAVELLLS/SCHNEIDER/LAURITZ KNUDSEN (L&T)
20	DISTRIBUTION BOARD	LEGRAND/SCHNEIDER/ABB/ LAURITZ KNUDSEN (L&T)
21	INDUSTRIAL PLUG AND SOCKET	LEGRAND/SCHNEIDER/NEPTUNE/HAGER
22	MODULAR SWITCHES AND SOCKETS	LEGRAND/HAVELLS/ABB/MK
23	CAT 6/CAT 6A CABLE	BELDEN, PANDUIT- PANNET, R&M, SCHNEIDER, SYSTIMAX, LYCO, COMMSCOPE
24	BLDC CEILING FAN	ATOMBERG/HAVELLS/ORIENT/CROMPTON
25	LED LIGHT FITTINGS	HAVELLS/BAJAJ/PHILIPS/WIPRO
26	CABLE TRAYS	OBO /INDIANA/LEGRAND/PROFAB ENGINEERS
27	LIGHT FIXTURES	PHIPLIPS/BAJAJ/HAVELLS/BAJAJ/K-LITE
27	STREET LIGHT POLES	BAJAJ/ PHILIPS/ WIPRO/ ROMPTON/GE/UTKARSH
28	SUBMERSIBLE PUMP SET	XYLEM/GRUNDFOS/ KIRLOSKAR
29	VRV AC SYSTEM	MITSUBISHI ELECTRIC/ BLUE STAR/DAIKIN/ HITACHI/ LG, CARRIER /VOLTAS.
30	COPPER REFRIGERANT PIPE	JOBO/MANDEV/RAJCO
31	PVC DRAIN PIPE	FINOLEX/ASHIRWAD/SUPREME
32	LIGHTNING PROTECTION SYSTEM (LPS)	DEHN/ OBO/ABB/ASEEL
33	ADDRESSABLE FIRE ALARM SYSTEM	BOSCH, EDWARD, ESSAR, NOTIFIER, SIEMENS
34	FIRE EXTINGUISHERS	CEASE FIRE / MINIMAX / SAFEX
35	DG SET WITH AMF PANEL	KEOL/CUMMINS/CATERPILLAR
36	UPS SYSTEM	VERTIV/ SCHNEIDER ELECTRIC / SOCOMEC/ EATON

6.APPENDIXES

APPENDIX - I

Cover Letter from the Bidder

(On Company letter head)

Date :

To
The Executive Engineer-Electrical,
Construction and Maintenance Division,
IIT Hyderabad, Kandi, Sangareddy,
Telangana-502284.

Reference: Notice Inviting Tender for Construction of Centre of Excellence for Centre of Clean Coal Energy & Net Zero (CLEANZ) facility at IIT Hyderabad. Sub Head: Internal & External Electro-Mechanical Works for CLEANZ Facility.

Dear Sir,

This is to notify you that our company intends to submit a response to this NIT for **Construction of Centre of Excellence for Centre of Clean Coal Energy & Net Zero (CLEANZ) facility at IIT Hyderabad. Sub Head: Internal & External Electro-Mechanical Works for CLEANZ Facility.**

Primary and Secondary contacts for our company are:

Primary Contact	**Secondary Contact**
Name:	
Designation:	
Address:	
Mobile No.	
e-mail ID	

We confirm that the information contained in this response or any part thereof, including its exhibits, and other documents and instruments delivered or to be delivered to IITH is true, accurate, verifiable and complete. This response includes all information necessary to ensure that the statements therein do not in whole or in part mislead the IITH in its short listing process.

We fully understand and agree to comply that on verification, if any of the information provided here is found to be misleading the short listing process or offering or accepting unduly favors from our company in the short listing process, we are liable to be dismissed from the selection process or termination of the contract during the project, if selected to do so, for undertaking the installation of said Project at IITH.

It is hereby confirmed that I/We are entitled to act on behalf of our corporation/company/firm/organization and empowered to sign this document as well as such other documents, which may be required in this connection.

Dated this Day of 2026
(Signature) (In the capacity of)
Duly authorized to sign the NIT Response for and on behalf of:

Sincerely,
[SYSTEM INTEGRATOR'S NAME]
Name
Title
Signature
Date
(Name and Address of Company) Seal/Stamp of System Integrator

CERTIFICATE AS TO AUTHORISED SIGNATORIES

I, certify that I am ..... of the ....., and that ..... who signed the above response is authorized to bind the corporation by authority of its governing body.
Date:
(Seal Here)

APPENDIX – II

LITIGATION IMPACT STATEMENT

On Company letterhead

Date

To
The Executive Engineer-Electrical,
Construction and Maintenance Division,
IIT Hyderabad, Kandi, Sangareddy,
Telangana-502284.

Reference: Notice Inviting Tender for Construction of Centre of Excellence for Centre of Clean Coal Energy & Net Zero (CLEANZ) facility at IIT Hyderabad. Sub Head: Internal & External Electro-Mechanical Works for CLEANZ Facility.

Dear Sir,

We have read and understood the contents of the Notice Inviting Tender and pursuant to this hereby confirm that we satisfy the eligibility criteria laid out therein. We hereby confirm that save as may be set out in the schedule attached to this statement, there is no litigation (including court, arbitration and other proceedings), inquiry or order from any regulatory authority, current or pending against us, which if adversely determined might have material adverse impact on our ability to carry on our business or pay our debts as they fall due or on our ability to enter into any of the transactions contained in or contemplated in respect of the *Construction of Centre of Excellence for Centre of Clean Coal Energy & Net Zero (CLEANZ) facility at IIT Hyderabad Sub Head: Internal & External Electro-Mechanical Works for CLEANZ Facility.*

(Signature) (In the capacity of)
Duly authorized to sign the NIT Response for and on behalf of:

Sincerely,
[BIDDER NAME]
Name
Title
Signature
Date
(Name and Address of Company) Seal/Stamp of System Integrator

Specical Conditions of Contract

1. Before tendering, the agency shall inspect the site of work and shall fully acquaint himself about the conditions prevailing at site, availability of materials, availability of land and suitable location for construction of godowns, stores and camp, transport facilities, the extent of lead and lifts involved in the work (over the entire duration of contract) including local conditions, as required for satisfactory execution of the work and nothing extra whatsoever shall be paid on this account.

2. The Agency shall at his own expense and risk arrange land for accommodation of labour, setting up of office, the storage of materials, erection of temporary work- shops, and construction of approach roads to the site of the work including land required for carrying out of all jobs connected with the completion of the work. In any case. **IIT Hyderabad (Institute) shall not permit setting up of labour camps within its premises**. If during construction it becomes necessary to remove or shift the stored materials shed workshop, access roads, etc. to facilitate execution of any other work by any other agency, the contractor shall do as directed by the Engineer-in-charge and no claim whatsoever, shall be entertained on this account.

3. It shall be deemed that the contractor shall have satisfied himself as to the nature and location of the work, transport facilities, availability of land for setting up of camp etc. The department will bear no responsibility for lack of such knowledge and the consequences thereof.

4. The Agency shall have to make approaches to the site, if so required and keep them in good condition for transportation of labour and materials as well as inspection of works by the Engineer-in-charge. Nothing extra shall be paid on this account.

5. The Agency shall at his own cost submit samples of all materials sufficiently in advance and obtain approval of the Engineer-in-charge. Subsequently, the materials to be used in the actual execution of the work shall strictly conform to the quality of samples approved by the Engineer- in-charge and nothing extra shall be paid on this account. The acceptance of any sample or material on inspection shall not be a bar to its subsequent rejection, if found defective.

6. The contractor shall at his cost, make all arrangements and shall provide necessary facilities as the Engineer-in-charge may require for collecting, preparing, packing forwarding and transportation of the required number of samples for tests for analysis at such time and to such places as directed by the Engineer-in-charge, and bear all charges and cost of testing unless specifically provided for otherwise elsewhere in the contract or specifications. The cost of tests shall be borne by the contractor/Institute in the manner indicated below (except for water):

a) By the contractor, if the results show that the material does not conform to relevant specifications and BIS codes or any other relevant code for which conformity test is carried out.

b) By the Institute, if the results show that the material conforms to relevant specifications and BIS codes or any other relevant code for which conformity test is carried out.

7. Materials used on work without prior inspection and testing (where testing is necessary) and without approval of Engineer-in-charge are liable to be considered unauthorized, defective and not acceptable. The Engineer-in-charge shall have full powers to require removal of any or all of the materials brought to site by contractor which are not in accordance with the contract, Specifications or do not conform in character or quality to the samples approved by the Engineer-in-charge. In case of default on the part of the contractor in removing rejected materials, the Engineer-in- charge shall be at liberty to have them removed at the risk and cost of the contractor

8. The work shall be carried out in such a manner so as not to interfere/or effect or disturb other works being executed by other agencies, if any.
9. Any damages done by the contractor to any existing work or work being executed by other agencies shall be made good by him at his own cost.

10. The work shall be carried out in the manner complying in all respects with the requirement of relevant rules and regulations of the local bodies under the jurisdiction of which the work is to be executed and nothing extra shall be paid on this account.

11. The contractor shall maintain in good condition all work executed till the completion of the entire work entrusted to the contractor under this contract and nothing extra shall be paid on this account.

12. No payment will be made to the contractor for damage caused by rain, floods and other natural calamities whatsoever during the execution of the works and any damage to the work on this account shall have to be made good by the contractor at his own cost and nothing whatsoever' shall be paid on this account.

13. The Item Rates or ~~Percentage Rates~~ for all items of work, unless clearly specified otherwise shall include the cost of all labour for materials, de-watering and other inputs involved in the execution of the items.

14. No claim whatsoever for idle labour, additional establishments, costs of hire and labour charges for tools and plants etc. would be entertained under any circumstances.

15. For the safety of all labour directly or indirectly employed in the work for the performance of the contractor's part of this agreement, the contractors shall, in addition to the provisions of Safety code and directions of the Engineer-in-charge make all arrangements to provide facility as per the provisions of Indian Standard Specifications (Codes) listed below and nothing extra shall be paid on this account.
    (a) IS 3696 Part I Safety Code for scaffolds and ladders
    (b) IS 3696 Part II Safety Code for scaffolds and ladders Part II ladders
    (c) IS 764 Safety Code for excavation work
    (d) IS 4081 Safety Code for Blasting and Drilling operations,
    (e) IS4138 Safety Code for working in compressed air.
    (f) IS 7293 Safety Code for working with construction machinery
    (g) IS 7969 Safety Code for storage and handling of building materials
    (h) IS 5216:1982 code of safety procedures and practices in electrical works

16. The contractor shall take all precautions to avoid all accidents by exhibiting necessary caution boards and by providing red flags, red lights and barriers. The con- tractor shall be responsible for any accident at the site of work and consequences thereof.

17. **Water & Power :** The contractor shall make his own arrangements for the water and power required for discharging his obligations under the scope of this tender. In case the Institute supplies water and or power, the contractor shall be liable to pay the charges on actual consumption basis at the same prevailing rates that the local authorities charge the Institute.

18. The ESI and EPF Contribution on the part of the employer in respect of the contract shall be paid by the contractor.

19. The contractor shall obtain a valid licence under the contract labour (R A) Act, 1970 and the contract labour (Regulation and Abolition) Central Rules, 1971 before the commencement of the work, and continue to have a valid licence until the completion of the work. The contractor shall also comply with provision of the Inter-

State Migrant Women (Regulation of Employment and conditions of service) Act 1979.

20. All tools, tackles, safety equipment and labours required for maintenance and testing works / AMC at all levels and heights shall have to be provided by the tenderer at no extra cost.

21. Spare parts used by vendor should conform to IS specifications as applicable.

22. Any damaged due to mishandling by the person deputed by the vendor shall have to be restored back to its original condition by the vendor at their own cost.

23. **Inspection before Dispatch:** All routine tests shall be conducted before dispatch of equipment's. No equipment shall be dispatched out from the manufactures premises before such tests are conducted and test result recorded. These test certificates shall be given along the supply of equipment. The Engineer- in-charge shall, if he so desires inspect and witness the pre-delivery tests. For this purpose, the agency shall give 15-day advance notice. The contractor shall arrange for inspection/Factory Acceptance Test (FAT) of the department authorized personnel. The main contractor has to organize the FAT inspections with IITH personnel by intimating them in advance. However, the inspection shall be done at the discretion of the Engineer-In-charge without any additional cost implication by the contractor to IITH for FAT but ROUTINE TEST & TYPE TEST Certificates shall have to be submitted for equipment.

    Prior to dispatch, all equipment's shall be adequately protected & insured for the whole period of transit, storage and erection against corrosion and incidental damages etc. from the effect of vermin, sunlight, rain, heat, humid climate and accidents etc.

24. Payment of Running bills

The running bills shall be submitted by the contractor as per the progress of work done at site. However, the following will be the basis of payment for the items claimed under running bills:

a) Gross Payment to be made on supply of material at site: 70% of Item Rate quoted.
b) Gross Payment to be made on installation of material at site: 15% of Item Rate quoted.
c) Gross Payment to be made on satisfactory Testing & Commissioning of material at site: 15% of Item rate quoted.

After receipt of running bill at IITH, the contractor shall get the work executed/claimed in bill checked and verified from the Engineer-In-charge within 02 weeks' time and after satisfactory verification of work executed at site, the payment to the contractor shall be released.

25. Defect-liability period(DLP)/Warranty Period:

The DLP/Warranty period shall be 60(sixty) months from the date of Handing over of the works after successful commissioning. If the contractor or his working people or servants shall break, deface, injure or destroy any part of equipment in which they may be working, or if any damage shall happen to the work while in progress, from any cause whatever or if any defect, shrinkage or other faults appear in the work within twenty four six months after a certificate final or otherwise of its completion shall have been given by the Engineer In Charge as aforesaid arising out of defect or improper materials or workmanship the contractor shall upon receipt of a notice in writing on that behalf make the same good at his own expense or in default the Engineer In charge cause the same to be made good by other workmen and deduct the expense from any sums that may be due or at any time thereafter may become due to the contractor, or from his security deposit or the proceeds of sale thereof or of a sufficient portion thereof. The security deposit of the contractor shall not be refunded before the expiry of thirty- six months after the issue of the certificate final or otherwise, of completion of work, or till the final bill has been prepared and passed whichever is later.

Scope of work & Technical Specifications for Compact Secondary Substation (CSS)

The Centre of Clean Coal Energy & Net Zero (CLEANZ) is a CoE jointly established by IIT Hyderabad and Coal India Limited to develop innovative solutions for sustainable coal utilization and clean energy. India has one of the largest coal reserves in the world, which has the potential to fulfil the country's energy security for several centuries. The development of clean and efficient technologies is crucial for the efficient utilization of this abundant resource. CLEANZ is committed to promote the development of high-impact coal-based technologies by integrating advanced scientific approaches with real-world applications. The center aims to create scalable solutions for clean coal utilization, CO_2 management, and circular economy. By combining interdisciplinary expertise with strong industry-academia partnerships, CLEANZ aims to support the transition of coal-based energy systems in line with India's net-zero goals.

Broad outlines of scope:

1. Establishment of Power Source (800 kVA CSS) from nearby SV-15 substation.
2. Supply, Installation, Testing and Commissioning (SITC) of External Electrification works.
3. Supply, Installation, Testing and Commissioning (SITC) of Internal Electrification works.
4. Supply, Installation, Testing and Commissioning (SITC) of 200 kVA DG Set.
5. Supply, Installation, Testing and Commissioning (SITC) of UPS System.
6. Supply, Installation, Testing and Commissioning (SITC) of UPS System LAN/Wi-Fi & Networking System.
7. Supply, Installation, Testing and Commissioning (SITC) of Earthing & Lightning protection system.
8. Supply, Installation, Testing and Commissioning (SITC) of VRV Air-conditioning works.
9. Supply, Installation, Testing and Commissioning (SITC) of Fire Alarm System, Fire Extinguishers etc.

1.0.0 **CODE & STANDARDS**:

1.1.0 All equipment and material shall be designed manufactured and tested in accordance with the latest applicable IEC standards. The 11KV Package Substation design must be as per IEC 61330/62271-202.

1.2.0 The Package Sub-station offered shall in general comply with the latest issues including amendments of the following standards.

Title	Standards
High Voltage Low Voltage Pre-Fabricated Substation	**IEC:61330/ 62271-202**
High Voltage Switches	**IEC 60265**
Metal Enclosed High Voltage Switchgear	**IEC 60298/IEC62271-200**
High Voltage Switchgear	**IEC 60694**
Low Voltage Switchgear and Control gear	**IEC 60439**
Power Transformers	**IEC 60076**

2.0.0 DESIGN CRITERIA

2.1.0 Package Sub-station consisting of **11KV Non-Extensible SF6 Ring Main Unit with VCB as protection + Transformer + Low Voltage Switchgear** with all connection accessories, fitting & auxiliary equipment in an Enclosure to supply Low-voltage energy from high-voltage system as detailed in this specification. The complete unit shall be installed on a substation plinth (base) as an **Outdoor substation** located at very congested places. 11KV Isolators control incoming-outgoing feeder cables of the 11KV distribution system. The Vacuum Circuit Breaker shall be used to control and isolate the 11kV/433V Distribution transformer. The transformer Low Voltage side shall be connected to Low Voltage switchgear. The connection cables to consumer shall be taken out from the Low Voltage switchgear.

2.2.0 The prefabricated-package substation shall be designed for
a) Compactness, b) fast installation, c) maintenance free operation, d) safety for worker/operator & public.

2.3.0 The Switchgear and component thereof shall be capable of withstanding the mechanical and thermal stresses of short circuit listed in ratings and requirements clause without any damage or deterioration of the materials.

2.4.0 For continues operation at specified ratings temperature rise of the various switchgear components shall be limited to permissible values stipulated in the relevant standard and / or this specification.

2.5.0 **Service Conditions:**

The Package substation shall be suitable for continuous operation under the basic service conditions indicated below:

Ambient Temperature:	40 Deg C
Relative Humidity	up to 95%
Altitude of Installation	up to 1000m

The Enclosure of High Voltage switchgear-control gear, Low Voltage switchgear-control gear and transformer of the package substation shall be designed to be used under **normal outdoor service conditions** as mentioned. The enclosure should take minimum space for the installation including the space required for approaching various doors & equipment inside.

3.0.0 SPECIFIC REQUIREMENT

3.1.0 The main components of a prefabricated- package substation are Transformer, High-voltage switchgear-control gear, Low-voltage switchgear-control gear and corresponding interconnections (cable, flexible, bus bars) & auxiliary equipment. The components shall be enclosed, by either common enclosure or by an assembly of enclosure. All the components shall comply with their relevant IEC standards.

3.1.1 **Ratings:**

Description	**Unit**	**Value**
Rated Voltage / Operating Voltage	kV rms	11
Rated frequency & Number of phases	Hz & nos.	50 & 3
Rated maximum power of substation	kVA	800 kVA.
Rated Ingress protection class of Enclosure	IP:	IP-23 for Transformer Compartment and IP:54 for LT & HT Switchgear Compartment.
Rated temp Class of Transformer Compartment		>K10 up to 1000kVA
HV Insulation Level		
Rated withstand voltage at power frequency of 50 Hz	kV rms	28
Rated Impulse withstand Voltage	kV peak	75

HV Network & Busbar		
Rated current	Amp	630A
Rated short time withstand current	kA rms / 3 sec	21
Making capacity for switch-disconnector & earthing switches	kA peak	50kA
Breaking capacity of Isolators (rated full load)	A	800A
LV Network		As per requirement.

OUTDOOR ENCLOSURE

3.2.0 **Outdoor enclosure:**

3.2.1 The outdoor enclosure shall be made up of Galvanized Iron sheet instead of CRCA tropicalized to local weather conditions. Painting with Powder coating 7 tank process.

3.2.2 The enclosure shall be of partially modular design of GI sheets fastened by riveting. Enclosure construction is with Steel Rivets instead of Nut-Bolt/welding.

3.2.3 The thickness of enclosure shall be 1.5 mm for non-load bearing members & 2mm for load bearing members.

3.2.4 The enclosure shall be painted with Powder Coating/polyurethane paint.

3.3.0 The metal base shall ensure rigidity for easy transport & installation. Base frame made up of 4mm HRCA Material with HOT DIP GALVANIZATION Process to enhance the life of the product and avoid rusting.

3.2.5 Substation will be used in outdoor application hence to prevent enclosure from rusting/corrosion, welding should be avoided.

3.2.6 The protection degree of the Enclosure shall be **IP54 for LT & HT switchgear compartment & IP23 for Transformer compartment.** Proper / adequate ventilation aperture shall be provided for natural ventilation by way of Louvers etc.

3.2.7 Considering the outdoor application of the substation the doors shall be provided with proper interlocking arrangement for safety of operator and to avoid corrosion door should have stainless steel hinges. Door should be provided with stoppers.

3.2.8 Interconnection between HT switchgear and transformer shall be using 1Cx3x95 sq.mm al. unarmored XLPE cable and between transformer and LT switchgear shall be using busbar.

3.2.9 Internal Fault: Failure within the package substation due either to a defect, an exceptional service condition or mal-operation may initiate an internal arc. Such an event may lead to the risk of injury, if persons are present. It is desirable that the highest practicable degree of protection to persons shall be provided. The Design shall be tested as per IEC61330/62271-202. **Type test report of arcing due to internal fault should submitted with offer. The Compact substation shall be tested for internal arc test –AB for 21KA for 1 sec (A-operator, B-pedestrian) (Test done with RMU inside CSS Enclosure)**

3.2.10 **Covers & Doors**: Covers & doors are part of the enclosure. When they are closed, they shall provide the degree of protection specified for the enclosure. Ventilation openings shall be so arranged or shielded that same degree of protection as specified for enclosure is obtained. Additional wire mesh may be used with proper Danger board for safety of the operator. All covers, doors or roof shall be provided with locking facility or it shall not be possible to open or remove them before doors used for

normal operation have been opened. The doors shall open outward at an angle of at least 90^0 & be equipped with a device able to maintain them in an open position. **The doors shall be lockable type with cylindrical shooting bolt and the locking arrangement shall be covered by magnetic flap pad Lock arrangement instead of Al-Drop(Normal Kundi tala). Roof is 6 Degree Inclined to avoid Water cogging during rainy season. The roof of the transformer compartment shall be detachable type to access the transformer for maintenance purpose.**

3.2.11 **Earthing**: All metallic components shall be earthed to a common earthing point. It shall be terminated by an adequate terminal intended for connection to the earth system of the installation, by way of flexible jumpers/strips & Lug arrangement. The continuity of the earth system shall be ensured taking into account the thermal & mechanical stresses caused by the current it may have to carry. The components to be connected to the earth system shall include:

a) The enclosure of Package substation,
b) The enclosure of High voltage switchgear & control gear from the terminal provided for the purpose,
c) The metal screen & the high voltage cable earth conductor,
d) The transformer tank or metal frame of transformer,
e) The frame &/or enclosure of low voltage switchgear,

3.2.12 There shall be an arrangement for internal lighting activated by associated switch for HV , Transformer & LV compartments separately.

3.2.13 **Labels**: Labels for warning, manufacturer's operating instructions etc. shall be durable & clearly legible.

3.2.14 Cleaning & Painting:

3.2.15 The paints shall be carefully selected to withstand tropical heat and rain. The paint shall not scale off or crinkle or be removed by abrasion due to normal handling. **The enclosure shall be painted with Powder Coating.**

TECHNICAL SPECIFICATION OF 11KV SF6 METAL ENCLOSED, INDOOR RING MAIN UNIT (RMU).

This RMU should be complete with all components necessary for its effective and trouble-free operation along with associated equipment etc. such components should be deemed to be within the scope of supplier's supply.

The RMU should be fixed type SF-6 insulated with Vacuum circuit breakers with O/C & E/F relay for the protection of the transformer. It should be maintenance free equipment, having stainless steel robotically welded IP67 enclosure.

4.0 STANDARDS AND REFERENCE DOCUMENTS

4.1 Codes and Standards

The **RING MAIN UNIT (RMU)** should be designed, manufactured and tested to the latest version of:

IEC 60694 Common specifications for high-voltage switchgear and control gear standards.
IEC 62271-200 : A.C metal-enclosed switchgear and control gear for rated voltages above 1KV and up to and including 72KV and the IEC Codes herein referred.
IEC 60129/ IEC 62271-102: Alternating current disconnections (isolators) and earthing switches
IEC 60529 : Classification of degrees of protection provided by enclosures
IEC 60265 High-voltage switches-Part 1: Switches for rated voltages above 1kV and less than 52 kV
IEC 60056 : Circuit breakers
IEC 60420 High-voltage alternating current switch-fuse combinations
IEC 60185 Current transformers
IEC 60186 Voltage transformers
IEC 60255 Electrical relays
Any other codes recognized in the country of origin of equipment might be considered provided that they fully comply with **IEC standard**s.

The design of the switchgear should be based on safety to personnel and equipment during operation and maintenance, reliability of service, ease of maintenance, mechanical protection of equipment, interchangeability of equipment and ready addition of future loads.

4.2 Salient Technical feature of "SF-6 RMU."

11KV SF6 INDOOR, NON-EXTENSIBLE, Ring Main Unit (RMU), comprising of 3No. 630 A Vacuum Circuit Breaker with (3 O/C & 1E/F) Relays with AIS Metering Module.

(A)Load break switch (630A) Load break switch should have the following

- Manually operated 12 KV, 630A Load Break switch and Earthing Switch with making capacity
- "Live Cable" LED Indicators through Capacitor Voltage Dividers mounted on the bushings.
- Mechanical ON/OFF/EARTH Indication
- Anti-reflex operating handle
- Cable testing possible without disconnection of cables.
- Cable boxes suitable for 1 X 3C x 300 sq mm XLPE Cable with right angle Cable terminal Protectors.
- Cable boxes should be Arc Proof and interlocked with respective Earthing Switches. For safety of operator it should not be possible to open the cable box unless the earth switch is ON.

(B) Circuit Breaker (630A) Circuit Breaker should have the following:

- Manually operated 630 A Vacuum circuit breaker and Earthing Switch with making capacity
- Mechanical tripped on fault indicator
- Auxiliary contacts 1NO and 1NC
- Anti-reflex operating handle
- "Live Cable" LED Indicators thru Capacitor Voltage Dividers mounted on the bushings.
- 3O/C + 1E/F self powered relay with Low and High set for Over current and Earth Fault. Relay should have facility to display the maximum loaded phase current also. Relay should have facility to trip the breaker from remote commands without shunt trip coil.
- Mechanical ON/OFF/EARTH Indication

(C) Metering Module having the following:

M: Air insulated metering module 12kV, 630A

Protection CT shall be 100/1A 2.5VA 5P10. (Make: ECS/Ericon/Vidyut/equiv) Metering CT shall be 100/1A 2.5VA Class 1.0 accuracy (Make:ECS/Ericon/Pragati/Eq)

Metering PT: 11000/√3 110V/√3 50VA Class 1.0 accuracy (Make: ECS/Pragati/Eq) 24V DC battery (Make: HBL/equiv) & Charger 12Ah Capacity (Make: Alan/equiv) Multifunction meter, CL-1.0 Accuracy with RS485 Port (Make: Secure/Rishabh/Conzerv)

INDOOR RMU

1. Modular design, panel type with front cable access.
2. RMU must be made of robotically welded Non Ferrite, Non magnetic stainless steel with thickness of 2-2.5 mm with all live parts inside stainless steel tank
3. Offered RMU must be Non extensible.
4. RMU with VI (Vacuum Interrupter) for 30000 Operations.
5. RMU with Solid Copper Busbar
6. Maximum Modules can be accommodated in a single robotically welded Stainless steel Tank so as to make it more compact and reliable.
7. Cable covers must be interlocked with Earth switch to have complete safety of operating person. The cable bushings shall be bolted type design

4.3 DIELECTRIC MEDIUM

SF6 GAS shall be used for the dielectric medium, Arc quenching should take place in vaccum for 11KV RMU's in accordance with IEC376. It is preferable to fit an absorption material in the tank to absorb the moisture from the SF6 gas and to regenerate the SF6 gas following arc interruption. The SF6 insulating medium shall be constantly monitored via a temperature compensating gas pressure indicator offering a simple go, no-go indication.

The RMU should have provision of Gas filling at site, in case there is some leakage of the gas.

4.4 GENERAL TECHNICAL REQUIREMENTS

4.4.1 **Fixed type Vacuum breakers insulated in SF6 gas**. It should be maintenance free, having stainless steel robotically welded enclosure for INDOOR RMU application.

4.4.2 **Low gas pressure devices- 1.4 Bar pressure**. RMU should have full rating with Bar gas pressure.

4.4.3 Live cable indicators- High operator safety.

4.4.4 Fully Rated integral earthing switch for Switches and Breakers.

4.4.5 Self-powered Microprocessor Based 3O/C + 1E/F self powered relay with Low and High set for Overcurrent and Earth Fault - Does not require any external source of power.

4.4.6 Units fully SCADA compatible. Retrofitting at site possible at a later date. Line switches (Load break switches) as well as T- OFF circuit Breaker can be operated by remote.

4.4.7 Cable boxes should be front access and interlocked with earth switch. No rear access required.

4.4.8 Cable testing possible without disconnection of cables.
4.4.9 Compact in dimension.
4.4.10 Low pressure, sealed for life equipment,
4.4.11 Cable earthing switch on all switching device-standard, for operator safety.
4.4.12 All live parts should be inside a hermetically sealed Stainless Steel enclosure for indoor RMU.
4.4.13 Indoor unit should be classified as sealed pressure system with gas leak rate of less that 0.1% per year requiring no gas filling for 30+ years of functional life.

4.5 TECHNICAL AND GUARANTEED PARTICULARS.

The bidders shall furnish all guaranteed technical particulars as called for this specification.

5.0 DESIGN CRITERIA

5.1 Service conditions

The offered switchgear and control gear should be suitable for continuous operation under the basic service conditions indicated below. Installation should be in normal indoor conditions in accordance with IEC 60694.

Ambient temperature -1oC to +45oC Relative humidity up to 95%
Altitude of installation up to 1000m, IEC 60120

5.2 General structural and mechanical construction

The offered RMU should be of the fully arc proof metal enclosed, free standing, floor mounting, flush fronted type, consisting of modules assembled into one or more units. Each unit is made of a cubicle sealed-for life with SF6 and contains all high voltage components sealed off from the environment. The overall design of the switchgear should be such that front access only is required. It should be possible to erect the switchboard against a substation wall, with HV and LV cables being terminated and accessible from the front.

The units should be constructed from robotically welded NON Ferrite ,Non Magnetic grade stainless steel sheets of 2-2.5mm thickness to ensure very high degree of precision in sealing of SF6 tank. **The design of the units should be such that no permanent or harmful distortion occurs either when being lifted by eyebolts or when moved into position by rollers.**

The cubicle should be have a pressure relief device. In the rare case of an internal arc, the high pressure caused by the arc will release it, and the hot gases is allowed to be exhausted out at the bottom of the cubicle. A controlled direction of flow of the hot gas should be achieved.

The switchgear should have the minimum degree of protection (in accordance with IEC 60529)

- IP 67 for the tank with high voltage components
- IP 2X for the front covers of the mechanism
- IP 3X for the cable connection covers

The RMU shall be internally arc tested for 21kA for 1 sec for the gas tank & it should be internally arc tested for cable compartment- 20kA for 1sec. Relevant type test reports should be submitted by the manufacturer.

6.0 TECHNICAL DATA

6.1 *Ring Main Unit, Electrical data*

Electrical data and service conditions

No	***Rated voltage***	KV	***12KV***
1	Power frequency withstand voltage	KV	28
2	Impuls withstand voltage	KV	95
3	Rated frequency	Hz	50
4	Rated current busbars	A	630
5	Rated current (cable switch)	A	630
6	Rated current (T-off)	A	630
	Breaking capacities:		
7	active load	A	630
8	closed loop (cable switch)	A	630
9	off load cable charging (cable Switch)	A	135
10	earth fault (cable swich)	A	200
11	earth fault cable charging (cable switch)	A	115
12	short circuit breaking current (T-off circuit breaker)	kA	20
13	Rated making capacity	kA	50
14	Rated short time current 3 sec.	kA	21
	Ambient temperature:		
15	Maximum value	°C + 45	
16	Maximum value of 24hour mean	°C + 35	
17	Minimum value	°C + 0	
18	Altitude for erection above sea level 4m	1000	
19	Relative humidity	Max 95%	

6.2 Ring Main Unit Technical data(11KV) INDOOR

General data, enclosure anddimensions

1 Standard to which Switchgear complies	:	IEC
2 Type of Ring Main Unit	:	Metal Enclosed, Panel type, Compact Module.
3 Number of phases	:	3
4 Whether RMU is type tested	:	Yes
5 Whether facility is provided with pressure relief	:	Yes
6 Insulating gas	:	SF6
7 Nominal operating gas pressure	:	1.4 bar abs. 20° C
8 Gas leakage rate / annum %	:	0.1% per annum
9 Expected operating lifetime	:	30 years
10 Whether facilities provided for gas	:	Yes, temperature compensated manometer monitoring can be delivered
11 Material used in tank construction	:	Stainless steel sheet

No Operations, degree of protection and colours

1 Means of switch operation	:	separate handle
2 Means circuit breaker operation	:	separate handle and push buttons
3 Rated operating sequence of Circuit Breaker	:	O –3min-CO-3min-CO
4 Total opening time of Circuit Breaker	:	approx. . 40-50ms
5 Closing time of Circuit Breaker	:	approx. . 30-45ms

6 Mechanical operations of switch	:	CO 1000
7 Mechanical operations of CO earthing switch	:	1000
8 Mechanical operations of circuit breaker	:	CO 2000
9 Principle switch / earth switch	:	3position combined switch
Degree of protection:		
10 High Voltage live parts,	:	SF6 tank IP 67
11 Front cover mechanism	:	IP 2X for Indoor
12 Cable covers	:	IP 3X for Indoor
Colours:		
14 Front cover	:	7035
15 cable cover	:	7035

7 .0 PANEL CB DESCRIPTION

7.1 CIRCUIT BREAKERS

Vacuum bottles should be use as interrupters of the currents. The circuit breaker main circuit should be connected in series with a three-position disconnector–earthing switch. The operation between circuit breaker and disconnector ear thing must be interlocked.

1. VCB must self tripping and has a self powered relay
2. The RMU must be non-extensible type

8 OTHER MAIN FEATURES

8.1 *Bus bars*

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

8.2 *Earthing Switch*

Earthing switches should be rated equal to the switchgear rating.
Earthing switches should be quick make type capable of making Rated Fault Current. Ear thing switch should be operated from the front of the cubicle by means of a removable handle.

8.3 *The mechanisms*

All mechanisms should be situated in the mechanism compartment behind the front covers outside the SF6-tank. The mechanism for the switch and the earthing switch is operating both switches via one common shaft. The mechanism provide independent manual operation for closing and opening of the switch, independent closing of the earthing switch and dependent opening of the earthing switch.

The mechanism for the T-off switch and earthing switch is operating both switches via one common shaft. The mechanism has stored spring energy and provide independent manual operation for closing and opening of the switch, independent closing of the ear thing switch and dependent opening of the ear thing switch. The mechanism for the vacuum circuit breaker (VCB) and disconnector- earthing switch is operating the VCB and the disconnector earthing switch via to separate shafts. The mechanism for the VCB has stored spring energy and provides independent manual operation for closing and opening of the VCB. The mechanism has a relay with related CT's and/or remote tripping device. The mechanism for the disconnector earthing switch provide independent manual operation for closing and opening of the disconnector, independent closing of the earthing switch and dependent opening of the earthing switch.

8.4 *Front covers*

The front cover contains the mimic diagram of the main circuit with the position indicators for the switching devices. The voltage indicators are situated on the front panels. Access to the cable bushings is in the lower part of each module.

8.5 *Position indicators*

The position indicators are visible through the front cover and are directly linked to the operating shaft of the switching devices.

8.6 *Voltage indicator*

The voltage indicators are situated on the front cover, one for each module, and indicate the voltage condition of each incoming cable. Identification of the phases is achieved with labels L1, L2 and L3 on the front of the voltage indicators. The voltage indicator satisfies the requirements of IEC61243.

8.7 Cable compartment

The Cables access in the RMU shall be from the front. The cable bushings shall be easily site- replaceable type. It should be possible to terminate up to a 1x 3c x120sqmm core HV cables in each cable compartment. The access to the compartment will be possible by removing the cable cover, hinged to the main frame only when earth switch is ON. Cable Compartments of Indoor RMU should be Arc Proof tested for 10kA for 0.1sec (the type test report for the same shall be submitted by the vender) and interlocked with respective Earth Switches. Each module has a separate cable compartment that is segregated from each other by means of a partition wall. A partition wall should be fitted to divide the cable compartment from the rear side of the switchgear. In case of an arc inside the tank, followed by the opening of the pressure relief, the partition wall prevents the hot gases flowing out from the pressure relief to enter the cable compartments. All covers are removable. The ground continuity is achieved when the covers are in place by means of Hinged connections. Interconnection between HT switchgear and transformer shall be using 1Cx3x95 sq.mm Al. unarmored XLPE Cable.

8.8. Power connection.

The cables are installed in the dedicated compartment below the mimic front cover. At the bottom of the cable compartment, an earthing bar system made of copper/GI with a minimum cross section of 120 mm^2 should be fitted. In each compartment the earthing bar should be fitted with 4 screws M10. The earthing system is connected to the tank by a copper/GI bar, which rises up to the connecting point of the tank behind the rear partition wall on the middle of the switchgear.

8.9 **Interlocking.**

The mechanism for the cable switch should be provide a built in interlocking system to prevent operation of the switch when the earthing switch is closed, and to prevent operation of the earthing switch when the switch is in the closed position.

The mechanism for the T-off switch should be provide a built in interlocking system to prevent operation of the switch when the earthing switch is closed, and to prevent operation of the earthing switch when the switch is in the closed position. The mechanism for the VCB and the disconnector- earthing switch should be has a built in interlocking system to prevent operation of the disconnector-earthing switch when the VCB is in the closed position.

Further is should not be possible to Open the Cable doors unless the Earthing Switch is Turned ON. In case the Cable door is accidentally left open a positive interlock shall prevent operation of Load Break Switch and Isolators / Breaker from any operation.

8.10 **Current Transformers**

All current transformers should be complying with IEC 60185.
Current transformers should be of dry type, with ratings and ratios as required.
Cable current transformers used in circuit breaker modules should be maximum 100mm wide. Current transformers used in metering cubicles should be having dimensions according to DIN 42600, Narrow type. Current transformer shall be placed in the cable covers so that it can be easily replaced at site without removing the bushings.

8.11 Auxiliaries.

The switchgear should be prepared for options like motor operation, auxiliary contacts and short- circuit indicators. Necessary terminal blocks and wiring etc. should be placed behind the front cover of each module.

8.12 Fault Passage Indicators.

These shall facilitate quick detection of faulty section of line. The fault indication may be on the basis of monitoring fault current flow through the device. The unit should be self- contained requiring no auxiliary power supply. The FPI shall be integral part of RMU to avoid thefts. The FPI shall have clear display, automatic reset facility and shall be SCADA compatible.

9 TESTING AND CERTIFICATION.

9.1 *TYPE TESTS.*

Units should be type tested in accordance with IEC standards 60056, 60129, 60265, 60298,60420,60529 and 60694. The following type tests should perform on the HT Switchgear and report should submit with offer.

- Short time and peak withstand current test
- Temperature rise tests
- Dielectric tests
- Test of apparatus i.e. circuit breaker and earthing switch
- Arc fault test
- Measurement of resistance of main circuit.
- Mechanical endurance test.
- Duty cycle test.
- Internal arc test for HT chamber.

- Type test reports for above type shall be submitted with the offer.

9.2*ROUTINE TESTS.*

Routine tests should be carried out in accordance with IEC 60298 standards. These tests should be ensure the reliability of the unit.

Below listed test should be performed as routine tests before the delivery of units;

- Withstand voltage at power frequency
- Measurement of the resistance of the main circuit
- Withstand voltage on the auxiliary circuits
- Operation of functional locks, interlocks, signaling devices and auxiliary devices
- Suitability and correct operation of protections, control instruments and electrical connections of the circuit breaker operating mechanism
- Verification of wiring
- Visual inspection
- Time travel characteristics measurement facility for Breaker should be available with the manufacturer to asses the quality of RMU.

Distribution Transformer

10.0 Cast Resin Dry Type Transformer

This specification covers the requirements of design, manufacture, testing and supply of cast resin dry type transformers complete with all the accessories and fittings for efficient and trouble-free operation.

10.1 CODES & STANDARDS

The equipment covered by this specification shall, unless Other wise stated to be designed, constructed and tested in accordance with latest revisions of relevant Indian standards / IEC publications.

IS 1271	-	Classification of Insulating Materials.
IS 2026	-	Power transformers (part I - V)
IS 2099	-	Bushing for alternating voltages above 1000 V
IS 2705	-	Current transformers
IS 3202	-	Code of practice for climate proofing
IS 3639	-	Power transformer fittings and accessories
IS 4257	-	Porcelain bushings for transformers
IS 11171	-	Dry type Transformer
IS 8478	-	Application guide for tap-changers
IS 10028	-	Code of practice for selection, installation and maintenance of transformers.

10.2 GENERAL DESIGN FEATURES:

10.2.1 All transformers shall be of the latest design, dry type Cast Resin only.

10.2.2 The type of cooling shall be Natural Air cooled (AN) and the corresponding ratings for each transformer shall be as indicated in the specific requirements.

10.2.3 Each transformer shall be suitable for operation at full rated power on all tapings without exceeding the applicable temperature rise.

10.2.4 It shall be possible to operate the transformer satisfactorily, with the loading guide specified in IS-6600. There shall be no limitations imposed by bushings, tap changers, auxiliary equipment to meet this requirement.

10.2.5 The transformers shall be designed to be capable of with-standing, without injury, the thermal and mechanical effects of short-circuits between phases or between phase and earth at the terminals of any winding with full voltage applied across the other winding for periods given in relevant standards. There shall be no limitations imposed by any part/component of the transformer/off load tap links to meet the short circuit level Specified.

10.2.6 Each transformer shall be designed for minimum no-load and load losses within the economic limit and shall be able to have minimum loss at the rated load condition.

10.2.7 All electrical connections and contacts shall be of ample cross sections for carrying the rated current without excessive heating.

10.2.8 The transformer shall be capable of continuous operation at full load rating under the following conditions.

a) Voltage variation = ± 10%
b) Frequency variation = ± 5%
c) Combined voltage and frequency variation (Absolute sum) = 10%

10.3 CONSTRUCTION

10.3.1 The transformer shall be dry type, AN cooled suitable for Compact substation application.

10.3.2 The core-clamping frame shall be provided with lifting eyes having ample strength to lift the complete core and winding assembly.

10.3.3 Off circuit tapings shall be provided on the HV windings. Tap changing is done by means of off-circuit links accessible through openings provided.

10.3.4 The lifting lugs and rollers shall be provided. A winding temp. Scanner shall be provided and is actuated by means of resistance temperature detectors embedded in LV windings of all three phases. It should have alarm and trip contacts at a specified temperature.

10.3.5 The transformer shall be of IP00 protection class and will be installed in the transformer compartment of compact substation having IP23 protection class.

10.4 WINDINGS

10.4.1 The winding insulation shall be of Class "F/H" and temperature rise limit i.e. 90 deg. C/ 115 Deg C over ambient of 50 Deg C.

10.4.2 Windings shall be of electrolytic copper conductors (circular in shape) of high conductivity and 99.9% purity.

10.4.3 Windings shall be designed to withstand the specified thermal and dynamic short circuit stresses.

10.4.4 The windings shall be duly sectionalized. Accessible joints brazed or welded and finished smooth shall connect similar sections. No corona discharge shall result on the winding upon testing the transformer for induced voltage test as specified in IS.

10.4.5 The end turns of the high voltage windings shall have reinforced insulation to take care of the voltage surges likely to occur during switching or any other abnormal condition.

10.4.6 The high voltage and low voltage winding are shall be made of copper Conductors. HV winding will be always be resin casted under vacuum while LV winding can either be casted or pre-impregnated with resin.

10.5. CORE

10.5.1 The double wound Core shall be constructed from non-ageing cold rolled Grain oriented steel sheets. The built core shall be painted with high temperature resistant paint to prevent corrosion at the edges of core plates and to withstand high temperatures. By using different core material optimization of core losses shall be achieved. The yokes shall be firmly clamped between yoke channels or plates. The top & bottom yoke frames shall be secured to each other by means of tie-rods, which help in securing the winding in place.

10.5.2 The design of the magnetic circuit shall be such as to avoid static discharges, development of short circuit paths within itself or to the earthed clamping structure and the production of flux component at right angles to the planes of laminations which may cause local heating.

10.6 OFF-CIRCUIT TAP CHANGING LINKS

10.6.1 Off circuit tapings are provided on HV windings. Tap changing is done by means off circuit links. Use of tap changing links eliminates any moving parts as against a manually operated tap changer.

10.7 Terminal Arrangement

HV side and LV side of transformer will have the top busbar arrangement for connection of HT side by means of cable and LT side by means of busbar.

10.8 Technical particulars of dry-type transformer

S. NO.	DESCRIPTION	PARTICULARS
01	Type	Three Phase, 50 Hz, Core type, two winding, Cast Resin Dry type Transformer
02	Rating (KVA)	800kVA
03	Winding material	Copper
04	No load voltage ratio	11 / 0.433
05	Connection a) HV b) LV	Delta Star with neutral
06	Vector group	Dyn11
07	Insulation level (KVp/ KVrms) a) HV b) LV	75 / 28 -/ 03
09	Type of Tap Changer for giving voltage variation to HV	Off ckt tap links
10	Tapping range	+5 % to –5 % in step of 2.5%
11	Temperature rise winding over ambient temperature	90 Deg C/ 115 Deg C
12	Class of Insulation	Class 'F/H'
13	Enclosure	IP 23 (With Enclosure)
14	Method of Cooling	AN (Air Natural)
15	No Load losses	As per IS 2026
16	Full load losses	As Per IS 2026
17	Termination HV LV	Busbar Busbar
18	Fittings for Dry type	2 Numbers Earthing Terminals, Rating and Diagram Plate, Lifting Lugs, Winding Temp Scanner.
19	Paint	Enamel-RAL 7032 (Siemens Grey)

10.8 PAINTING

10.8.1 All steel surfaces shall be thoroughly cleaned by sand blasting or chemical agents as required to produce a smooth surface free of scale, grease and rust

10.8.2 The external surface, after cleaning, shall be given a cost of high quality red oxide or yellow quoted primer, followed by filler coats.

10.9 Routine Test

All Routine Tests in accordance with IEC 60076 / IS 2026 shall be carried out on each transformer.

L.T. Panel

11.1 System:-

a) **Declared voltage** :– 3 Phase,400V (±6%) 50 Hz,
b) **Neutral** :– Solidly earthed at substation.
c) **Busbar** – Aluminum

11.2 General finish:- Tropical, totally enclosed, metal-clad, weather-proof, vermin and dust proof.

11.3 Construction :

Enclosure:- Dead Front type of enclosure shall be able to provide the minimum degree of Protection IP:2X. Panel main Busbar shall be of Aluminum Material.

11.4 Circuit Ways: As per BOQ with Aluminum Busbar

800 kVA Dry type Transformer – Incomer ACB– 1000A,4P, 66KA Fixed manual EDO Type Air Circuit Breaker (ACB) Outgoings MCCB- 800A, 4P MCCB microprocessor based released for OC,SC and EF-4 Nos Air Circuit breaker will be of 3P/4P, 50/65KA Electrical Draw out (EDO) microprocessor based over current, short circuit and earth fault release.

11.5 GENERAL CHARACTERISTICS OF ACB

11.5.1) Conformity with Standards

The air circuit-breakers used in low voltage installations are constructed and tested in accordance with the IEC 947/IS 947 Standards and respect the following EC directives:

- "Low voltage Directive" (LVD) No. 73/23 EEC
- "Electromagnetic compatibility Directive" (EMC) No.89/336 EEC

11.5.2) Functional characteristics

- The circuit-breakers must have a rated service voltage of 690 V AC and a rated insulation voltage of 1000 V.
- The circuit-breakers must have a rated impulse withstand voltage of 12 kV.
- The rated uninterrupted current must be between 800 and 6300 A with the possibility of selection of ratings from 400 A.
- Different versions shall be available with rated ultimate short circuit breaking capacity(Icu) from 50kA at 415V and shall have rated short circuit service breaking capacity(Ics) equals to Icu.
- Different versions of circuit-breakers shall be available with rated short-time withstand current (Icw -1 sec) for 50kA for 1sec in category B.
- It must be possible to supply the circuit-breakers both from the top and bottom terminals without derating their performances and without jeopardising their functionality.
- The mechanical life must be at least 12000 operations, without the need for maintenance of the contacts and arcing chambers.
- The electrical life at a voltage of 440 V AC must be and without the need for maintenance of the contacts and arcing chambers:
  - at least 9000 operations up to 2000 A
  - at least 6000 operations up to 3200 A

  these values are intended to be valid only for CAT B circuit-breakers.

11.5.3) Environmental characteristics

- Operating temperature: -25 °C...+70 °C (-13 °F...158 °F)
- Storage temperature: -40 °C...+70 °C (-40 °F...158 °F)
- Altitude: operation without derating up to 2000 m a.s.l. (6600 ft), and with derating up to 5000 m a.s.l. (16500 ft)
- Suitability for use in a hot-humid environment. With regard to this, the circuit-breakers must undergo a tropicalisation process which makes them suitable for use in a hot-humid environment, as established by the prescriptions of the main shipping registers and in accordance with the international IEC 60068-2-30 Standards.

11.5.4) Construction characteristics

- The circuit-breaker structure must be made of steel sheet.
- There must be total segregation between power and front shield, using double insulation where suitable so as to guarantee maximum operator safety.
- Total segregation between the phases must be guaranteed for safety reasons.
- The main contacts must be separate from the arcing contacts in cat. B circuit-breakers only.
- It must be possible to inspect easily the arcing chambers easily and to check main contact wear with the circuit-breaker racked-out, by removing the arcing chambers.
- All the circuit-breakers in the range have the same height and depth with the aim of standardising the supporting structures of the switchgear and the switchgear itself as far as possible.
- The circuit-breakers must indicate the precise position of the main contacts and the condition of springs charged/discharged on the front, by means of certain and reliable signals.
- The operating mechanism must be of the stored energy type with operation by means of precharged springs fitted with anti pumping device. The springs are charged manually by activating the front lever, or by means of a geared motor, supplied on request.
- The whole range of air circuit-breakers must be fitted with electronic protection releases. It must be allowed the interchangeability of protection releases from skilled personnel.
  - ACBs shall have minimum watt losses in order to restrict temperature rise inside the breaker.

11.5.5) RELEASES

1) Release (Protection functions)

- The release must not require auxiliary power supplies since the power is taken from the current transformers.
- The signals supplied by the release must not operate with power supply supplied by internal batteries. The basic version of the release must provide:
- protection against overload with trip with inverse long time delay (L)
- protection against instantaneous short-circuit (I)
- Selective short-circuit (S)
- Earth fault (G)

The setting ranges shall be:

- Protection against overload (L)
  Characteristic t=k/I2
  Trip threshold I1=(0.4...1)xIn with timing adjustable from 3 to 144 sec. (value referred to a current equal to 3xI1)
- Protection against selective short-circuit (S)
  Characteristics t=k and t=k/I2
  Trip threshold I2=(1...10) xIn with timing adjustable from 0.1 to 0.8 sec.
  (value referred to a current equal to 10xIn for curves at t=k/I2 and referred to currents >I2 for curves at t=K)
- Protection against instantaneous short-circuit (I) Trip threshold I3=(1,5...15) xIn
- Protection against earth fault (G)
  Characteristics t=k and t=k/I2
  Trip threshold I4=(0.2...1) xIn with timing adjustable from 0.1 to 0.8 sec. (value referred to a current equal to 4xI4)
- Neutral protection level:
  50% - 100% - 200% - excluded. All the protection functions except protection against overload must be excludable User interface and signaling LEDs
- The release shall allow parameterization of the trip thresholds and timing by means of dipswitches.

- alarm and trip signalling for all the protection functions by means of LEDs located on the release shall be available. No batteries or external power supplies shall be necessary for powering these indicators. The indication shall be available for not less than 48 hours after the trip, even with the circuit-breaker open
- An alarm shall indicate by means of LEDs located on the release the disconnection of opening solenoid and current transformers. A trip shall also occur, after a short time delay, when the disconnection is detected.
- It shall be possible, with the aid of external devices, to read currents, and information on last 10 trips (currents, protection tripped) occurred to the unit

13.0 CSS Earthing:

Earthing arrangement shall be provided for earthing each cable, PVC cable gland, neutral busbar, chassis and frame work of the cubicle with separate earthing terminals at two ends. The main earthing terminals shall be suitably marked .The earthing terminals shall be of adequate size, protected against corrosion, and readily accessible. These shall be identified by means of sign marked in a legible manner on or adjacent to terminals.

Neutral bus bar strip shall be connected to Earthing terminal with help of GI strip of suitable capacity & nut-bolt arrangement.

TYPE / ROUTINE TEST ON PACKAGE SUBSTATION

14.0. TYPE TESTS FOR THE PACKAGE SUBSTATION:

14.1 The Package Substations offered must be type-tested as per IEC 61330/62271-202. The copy of type test summary should be submitted along with the tender. CSS manufactured at in JV consortium/ System Houses/ System Integrator shall not be accepted. Only Original Equipment Manufacturers are accepted.

14.2 **Routine Tests**: The routine tests shall be made on each complete prefabricated substation.

a) Voltage tests on auxiliary circuit.
b) Functional test.
c) Verification of complete wiring.

14.3 **Test Witness:** Routine test shall be performed in presence of Owner's representative if so desired by the Owner. The Contractor shall give at least fifteen (15) days advance notice of the date when the tests are to be carried out.

14.4 Test Certificates:

Certified reports of all the tests carried out at the works shall be furnished in three (3) copies for approval of the Owner.

14.5 Performance Certificate to Qualify Technical Bid :

Packaged Substation Enclosure:

- **Tests to verify the degree of protection.**
- **Arcing due to internal fault**
- **Test to prove enclosure class - Temperature rise of the transformer inside the enclosure.**
- **Short circuit test to prove the capability of the earthing circuits to be subjected to the rated peak and the rated short-time withstand currents.**

Tests to verify the withstand of the enclosure of the prefabricated substation against mechanical stress

8. FORMS

FORM-A

FINANCIAL INFORMATION

Name of Bidder:

I. Financial Analysis Details to be furnished duly supported by figures in balance sheet/ profit loss account for the last five years duly certified by the Chartered Accountant, as submitted by the applicant to the Income Tax Department (Copies to be attached).

Fig in Lakhs Rs.

Sl. No.	Particulars	Financial Years				
		2020-21	2021-22	2022-23	2023-24	2024-25
i)	Turnover of construction Works					
ii)	Profit /Loss					

II. Financial arrangements for carrying out the proposed work.

III. Net worth Certificate from Bankers of the bidder in the prescribed Form B.

Signature of Chartered Accountant with Seal

Signature of Bidder(s)

FORM – B

FORM OF BANKERS' CERTIFICATE" FROM A SCHEDULED BANK

To
The Executive Engineer -Electrical
Construction and Maintenance Division,
IIT Hyderabad.

This is to certify that to the best of our knowledge and information that Ms..... having marginally noted address, a customer of our bank are/is respectable and can be treated as good for any engagement up to a limit of Rs.....(Rupees.....).

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

(Signature with seal of Branch Manager)

For the Bank NOTE:

(1) In case of partnership firm, certificate should include names of all partners as recorded with the Bank.
(2) The banker's certificate should be on letter head of the bank

FORM - C

FORM FOR CERTIFICATE OF NET WORTH FROM CHARTERED ACCOUNTANT

It is to certify that as per the audited balance sheet and profit & loss account during the **financial year 2024-25**, the Net Worth of M/s _____(Name & Registered Address of contractor/ Individual/firm/company), as on _____(the relevant date) is Rs._____after considering all liabilities. It is further certified that the Networth of the company has not eroded by more than 30% in the last three years ending on **31st March 2025.**

Signature of Chartered Accountant

Name of Chartered Accountant

Membership No. of ICAI

Date and Seal

NOTE: The Turnover Certificate and Networth certificate shall be submitted by the Intending bidder for the same set of consecutive 03 financial years only as per below mentioned options:

Form -D

DETAILS OF ELIGIBLE SIMILAR NATURE OF WORKS COMPLETED DURING THE LAST SEVEN YEARS ENDING PREVIOUS DAY OF LAST DATE OF SUBMISSION OF TENDER

Sl. No.	Name of work/project and Location	IITH or sponsoring Organization	Cost of work (in Crores)	Date of commencement as per contract	Stipulated date of completion	Actual date of completion	Litigation/ arbitration pending / in progress with details*	Name and address (Postal & email)/ contact no of officer	Whether the work was done on back to back basis. Yes/No
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

***Indicate gross Amount Claimed and Amount Awarded by the Arbitrator.**

SIGNATURE (S) OF BIDDER (S) (WITH STAMP)

FORM "E"

LIST OF THE PROJECTS UNDER EXECUTION OR AWARDED

Sl. No.	Name of work/ project and Location	IITH or sponsoring Organization	Cost of work (in Crores)	Date of commencement as per contract	Stipulated date of completion	Present Progress (Financial & Physical)	Litigation/ arbitration pending / in progress with details*	Name and address (Postal & email)/ contact no of officer	Whether the work being done on back to back basis. Yes/No

***Indicate gross Amount Claimed and Amount Awarded by the Arbitrator.**

SIGNATURE (S) OF BIDDER (S) (WITH STAMP)

FORM 'F'

PERFORMANCE REPORT OF WORKS REFERRED IN FORM –B& C:

(Bidder may suggested to submit the Performance Report with the details covering in this Form-F)

1.	Name of work / Project & Location	
2.	Agreement No.	
3.	Estimated Cost	
4.	Tendered Cost	
5.	Actual Value of work done.	
6.	Date of Start	
7. 8. 9.	Date of completion i) Stipulated Date ofCompletion (as mentioned in work order) ii) Actual Date of Completion i)Whether case of levy of compensation for delay has been decidedor not ii) If decided, amount of compensation levied for delayed completion, ifany.	Yes / No.
	1) Quality of Work	Outstanding / Very Good / Good / Poor
	2) Financial Soundness	Outstanding / Very Good /Good /Poor
	3) Technical Proficiency	Outstanding / Very Good/ Good /Poor
	4) Resourcefulness	Outstanding / Very Good/ Good /Poor
	5) General Behaviour	Outstanding / Very Good/ Good /Poor
Dated:		Executive Engineer or Equivalent with office stamp

FORM "G"

STRUCTURE ORGANISATION

1. Name address of the bidder:
2. Telephone no./Telex no./Fax no.:
3. Legal status of the bidder (attach copies of original document defining the legal status):

(a) An Individual

(b) A proprietary firm

(c) A firm in partnership

(d) A limited company or Corporation

4. Particulars of registration with various Government Bodies (attach attested photocopy):

Organization/Place of registration	**Registration No.**
i.	
ii.	
iii.	

5. Names and titles of Directors Officers with designation to be concerned with this work:
6. Designation of individuals authorized to act for the organization:
7. Was the bidder ever required to suspend construction for a period of more than six months continuously after he commenced the construction? If so, give the name of the project and reasons of suspension of work:
8. Has the bidder, or any constituent partner in case of partnership firm, ever abandoned the awarded work before its completion? If so, give name of the project and reasons for abandonment:
9. Has the bidder, or any constituent partner in case of partnership firm, ever been de-barred/black listed for tendering in any organization at any time? If so, give details:
10. Has the bidder, or any constituent partner in case of partnership firm, ever been convicted by the court of law? If so, give details:
11. In which field of Civil Engineering construction the bidder has specialization and interest?:
12. Any other information considered necessary but not included above.:

Signature of Bidder(s)

FORM "H"

DETAILS OF TECHNICAL & ADMINISTRATIVE PERSONNEL TO BEEMPLOYED FOR THE WORK

S.No.	Designation	Total Number	Number available for this work	Name	Qualifications	Professional experience and details of work carried out	How these would be involved inthis work	Remarks

Signature of Bidder(s)

FORM - I

DETAILS OF CONSTRUCTION PLANT AND EQUIPMENT LIKELY TO BEUSED IN CARRYING OUT THE WORK

Sl. No.	Name of equipment	No.	Capacity or Type	Age	Condition				Current location	Remarks
						Presently owned	Leased	To be Purchased		

Signature of Bidder(s)

FORM 'J'

AFFIDAVIT

I/we undertake and confirm that our firm/partnership firm has not been blacklisted by any state/Central Departments/PSUs/Autonomous bodies during the last 7 years of its operations. Further that, if such information comes to the notice of the department then I/we shall be debarred for bidding in IIT Hyderabad in future forever. Also, if such information comes to the notice of IIT Hyderabad on any day before date of start of work, the Engineer-in-charge shall be free to cancel the agreement and to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee (Scanned copy of this notarized affidavit to be uploaded at the time of submission of bid)

NOTE: Affidavit to be furnished on a 'Non-Judicial' stamp paper worth Rs.100/-

Signature of Bidder(s) or an authorized Officer of the firm with stamp

Signature of Notary with seal

FORM-L

WLLINGNESS CERTIFICATE FROM CONCERNED COMPETENT ASSOCIATE CONTRACTOR

(Separate for each sub head of E&M work)

Name of Work:

I hereby give my willingness to work as E&M Contractor for Sub Head of the above mentioned work. I will execute the work as per specifications and conditions for the agreement and as per direction of the Engineer-in-charge. Also I will employee full time technically qualified supervisor for the works.

I will attend inspection of officers of the department as and when required.

Signature of Main Contractor
Address Telephone: FAX:
Email:
Signature of Associate Electrical
Contractor
and Registration Detail Address:
Telephone:
FAX:
Email:

9. PROFORMA OF SCHEDULES

SCHEDULE 'A'

Schedule of quantities (Enclosed): Volume -2 (Price Bid)

SCHEDULE 'B'

Schedule of materials to be issued to the contractor

Sl. No.	Description of item	Quantity	Rates in figure & words at which the material will be charged to the Contractor	Place of issue
..... NIL				

SCHEDULE 'C'

Tools and plants to be hired to the contractor.

Sl. No.	Description	Hire Charges per day	Place of issue
..... NIL			

SCHEDULE 'D'

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

--- NIL ---

SCHEDULE 'E'

Reference to General Condition of Contract.: *Posted in the website of the Institute.*

Name of work	:	**Construction of Centre of Excellence for Centre of Clean Coal Energy & Net Zero (CLEANZ) facility at IIT Hyderabad. Sub Head: Internal & External Electro-Mechanical Works for CLEANZ Facility.**
Estimated cost of work	:	***Rs. 2,77,67,457/- only***
Earnest money	:	***Rs. 5,55,500/- only***
Performance Guarantee	:	***5.0%** of the accepted tendered value*
Security Deposit	:	**2.5%** *of the tendered value*

SCHEDULE 'F'

GENERAL RULES AND DIRECTIONS:

Officer inviting tender:	:	***Executive Engineer-Electrical, IITH***
Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with Clauses12.2 & 12.3	:	***1) Electro-Mechanical works...96.3%*** ***2) Civil foundation works: 3.7%***

Definitions:

2(v) Engineer -in- Charge	:	***Executive Engineer-Electrical, Indian Institute of Technology, Hyderabad.***
2(viii) Accepting Authority	:	***Dean (Planning), Indian Institute of Technology, Hyderabad.***
2(x) Percentage on cost materials and Labour to cover all overheads and profit	:	*15% (Fifteen) per cent.*
2(xi) Standard Schedule of Rate	:	*CPWD, Delhi Schedule of Rates (DSR) 2022 E &M, with up to date correction slips.*
Standard Contract Form	:	*IITH General Conditions of Contract for Construction Works*

Clause 1

i) Time allowed for submission of Performance Guarantee, Programme Chart (Time and Progress) and applicable licenses, registration with EPFO, ESIC and BOCW Welfare Board or proof of applying thereof from the date of issue of letter of acceptance, in days	:	*15 (Fifteen) Days*
ii) Maximum allowable extension beyond the period provided in (i) above	:	*7 (Seven) Days with late fee @0.1% of PG Amount*

Clause 1A Whether Clause 1A is applicable	:	Yes
Clause 2 Authority for fixing Compensation under Clause 2	:	*Superintending Engineer, Indian Institute of Technology, Hyderabad*

Clause 3 (VII): If the contractor had secured the contract with Government as a result of wrong tendering or other non-bonafide methods of competitive tendering or commits breach of Integrity Agreement-will be made ineligible.

Clause 5:

Number of days from the date of issue of letter of acceptance for reckoning date of start	:	***15 Days** from the date of issue of LOA or handing over of site, whichever is later*
Milestones	:	Applicable

Table of Milestones for Project Completion
Time Period Allowed: 08 Months

Sl. No.	Milestone Programme	Time Allowed (from date of start)	Amount to be withheld in case of non- achievement of milestone
1	Planning and Designing – Submission and approval of all Internal Power & Lighting Layouts, External Cable routing Layouts, Street Lights layouts, Earthing Layouts, CSS drawings, All product TDS sample approvals allied drawings good for construction.	01 Month	1 % of total contract amount
2	Delivery of all electro-mechanical equipment including lights fixtures, Power sockets, LT Cables, LT Switchgear, Fans, CAT6A cables and allied components	03 Months	1 % of total contract amount
3	Installation of all Electro-mechanical equipment's such as lights fixtures, Power sockets, LT Cables, LT Switchgear, Fans, CAT6A cables and allied components.	05 Months	1 % of total contract amount
4	Delivery of all electro-mechanical equipment including HT Cables, HT Switchgear, Dry type Transformer, CSS, Earthing system and allied components	06 Months	1 % of total contract amount
5	Installation of all Electro-mechanical equipment's such as HT Cables, HT Switchgear, Dry type Transformer, CSS, Earthing system and allied components.	07 Months	1 % of total contract amount
6	Testing and commissioning of Electro-Mechanical equipment's including Dry type Transformer, CSS, Breakers, HT&LT switchgear, HT&LT Cables and allied components	08 Months	1 % of total contract amount

NOTE:

1. Withheld amount shall be released if and when subsequent milestone is achieved within respective time specified. However, in case milestones are not achieved by the Contractor for the work, the amount shown against milestone shall be withheld without prior notice.
2. Intending bidder may submit phasing of activities/milestones based on their resources and methodology at the time of bidding corresponding to physical milestones/stages indicated in the above table. These shall be formed

part of the agreement after approval of the accepting authority, otherwise it would be assumed that agency agrees with the above mentioned physical milestones.

Time allowed for execution of work	:	08 Months
Authority to give fair and reasonable Extension of time for completion of work (Web based hindrance register)	:	Superintending Engineer, IITH
Rescheduling of mile stones	:	Superintending *Engineer, IITH*
Clause 6:- Measurement Book Clause applicable, 6	:	*(i) For works having estimated cost more than Rs 15 Lakh – Clause 6* (ii) *For works having estimated cost Rs. 15 Lakh or less – Contractor's option of Clause 6 or to be exercised at the time of Tender Submission*
Clause 7: Gross work to be done together with net payment /adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment	:	*Rs. 10 Lakhs/-*
Clause 7A: Whether Clause 7A is applicable	:	*Yes.* *No running account bill shall be paid for the work till the applicable labour licenses, registration with EPFO, ESIC and BOCW Welfare Board, whatever applicable are submitted by the contractor to the Engineer-in-charge.*
Clause 10A: List of testing equipment to be provided by the contractor at site lab	:	*As given in additional specifications*
Clause 10B (i)- Secured advance on Materials: Whether Clause 10 B (i) shall be applicable	:	NA
Clause 10C: Component of labour expressed as percent of value of work	:	NA
Clause 10CA	:	*Not Applicable*
Clause 10CC	:	*Not Applicable*
Clause 10D	:	*Applicable*

Clause 11: Specification to be followed for execution of work	:	**For ELECTRICAL AND MECHANICAL WORKS** 1. CPWD General Specifications for Electrical works: Part I Internal 2023 Part-II External Part IV Substations 2013 Part VI Fire Detection and Alarm System – 2018 Part VII D.G. Sets - 2024 2. Heating, Ventilation & Air-Conditioning (HVAC) -2024 3. CPWD Specifications for Civil Volume-I & II 4. Particular specifications given in the tender.
Clause 12: **12.2 & 12.3:** Deviation limit beyond which Clause 12.2 &12.3 shall apply for building work **12.5** : Deviation Limit beyond which clauses 12.2 & 12.3 shall apply for foundation work	:	*100% (One hundred per cent)*
	:	*100% (One hundred per cent)*
Clause 14: Whether Clause 14 is applicable	:	*Yes.*
Clause 16 Competent Authority for deciding reduced rates.	:	*Superintending Engineer, IIT Hyderabad up to 5% of tendered amount, beyond which, Director, IITH.*
Clause 18: List of mandatory machinery, tools & plants to be deployed by the contractor at site	:	*As required for the work.*
Clause 25: Settlement of disputes by Conciliation and Arbitration:		
Conciliator	:	*Dean (Planning)*
Authority to appoint arbitrator	:	*Director, IIT Hyderabad*
Place of arbitration	:	*Hyderabad*
Venue of arbitration	:	*IIT Hyderabad*
Type of Arbitration Tribunal	:	Sole Arbitrator

Note: Provisions of Arbitration and Conciliation Act 1996 with latest amendments in force shall be applicable.

Clause 32: The Requirement of Technical Representative(s) at Site execution and Recovery Rates at which recovery shall be made from the Contractor in the event of not fulfilling the provision of clause32 are as below:

Sl. No.	Qualification	Discipline	Number	Minimum Experience (Years)	Designation	Rate of recovery
1	Graduate Engineer - Electrical	B.Tech/BE in Electrical Engineering	1	5	E&M Project Manager	Rs. 70,000/- per Month per person
2	Diploma/ Graduate Engineer - Electrical	Electrical Engineering	1	7	Project/Site Engineer-Quality & Safety	Rs. 40,000/- per Month per person

Clause 38: Not Applicable

1	Schedule/statement for determining theoretical quantity of cement & bitumen based on Delhi Schedule of Rates.	Delhi Schedule of Rates 2023 with amendments up to the date of submission of bid.
2	Variations permissible on theoretical quantities.	
(a)	Cement	
	Cement for works with estimated cost put to tender more than Rs. 5 Lakh.	2% Plus/Minus
	Bitumen for all works.	2.5% Plus only and nil on minus side.
(b)	Steel reinforcement and structural steel	2% Plus/minus side sections for each diameter, section and category.
(c)	All other materials	Nil

10. Annexures

Annexure-I

On non-judicial stamp paper of minimum Rs. 100/-only

Guarantee offered by Bank to IITH in connection with the execution of contracts) Form of Bank Guarantee for Earnest Money Deposit /Performance Guarantee/Security Deposit/Mobilization Advance/ Refund of milestone with held amount

1. Whereas the Executive Engineer.....(name of division) ....., IITH on behalf of the President of India (hereinafter called "The Government") has invited bids under (NIT number)..... dated ..... for ..... (name of work) The Government has further agreed to accept irrevocable Bank Guarantee for Rs. ..... (Rupees ..... only) valid up to (date)*...as Earnest Money Deposit from ..... (Name and address of contractor) (hereinafter called "the contractor") for compliance of his obligations in accordance with the terms and conditions of the said NIT.

   OR**

   Whereas the Executive Engineer ..... (name of division) ....., IITH on behalf of the President of India (hereinafter called "The Government") has entered into an agreement bearing number..... with .....(name and address of the contractor) (hereinafter called "the Contractor") for execution of work ..... (name of work)..... The Government has further agreed to accept an irrevocable Bank Guarantee for Rs. ..... (Rupees ..... only) valid up to ..... (date)..... as Performance Guarantee/Security Deposit/Mobilization Advance/Refund of mile stone withheld amount from the said Contractor for compliance of his obligations in accordance with the terms and conditions of the agreement.

2. We,..... (indicate the name of the bank).....(herein after referred to as "the Bank"), hereby undertake to pay to the Government an amount not exceeding Rs. ..... (Rupees..... only) on demand by the Government within 10 days of the demand.

3. We,.....(indicate the name of the Bank) ....., do here by undertake to pay the amount due and payable under this guarantee without any demur, merely on a demand from the Government stating that the amount claimed is required to meet the recoveries due or likely to be due from the said Contractor. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.....(Rupees only).

4. We, ... (indicate the name of the Bank)....., further undertake to pay the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor in any suit or proceeding pending On non-judicial stamp paper of minimum Rs. 100 before any Court or Tribunal, our liability under this Bank Guarantee being absolute and unequivocal. The payment so made by us under this Bank Guarantee shall be a valid discharge of our liability for payment there under and the Contractor shall have no claim against us for making such payment.

5. We,..... (indicate the name of the Bank)....., further agree that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligation here under to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said Contractor or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said Contractor or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. We,..... (indicate the name of the Bank)....., further agree that the Government at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor at the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee the Government may have in relation to the Contractor's liabilities.

7. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

8. We,.....(indicatethenameoftheBank)..... , undertake not to revoke this guarantee except with the consent of the Government in writing.

9. This Bank Guarantee shall be valid up to..... unless extended on demand by the Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs..... (Rupees.....only) and unless a claim in writing is lodged with us within the date of expiry or extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.

Date .....
Witnesses:

1. Signature..... Authorized signatory

   Name and address

   Name
   Designation Staff code no.

2. Signature..... Bank seal
   Name and address

* Date to be worked out on the basis of validity period of 90 days where only financial bids are invited and 180 days for two/three bid system from the date of submission of tender.

**In paragraph 1, strike out the portion not applicable. Bank Guarantee will be made either for earnest money or for performance guarantee/security deposit/mobilization advance/Refund of mile stone withheld amount, as the case may be.

Annexure-II

INDEMNITY BOND (VIOLATION OF LAWS, NORMS, ACCIDENTS, DAMAGES ETC)
(On Non-Judicial Stamp Paper of Rs.100/-only)

Name of work: Construction of Centre of Excellence for Centre of Clean Coal Energy & Net Zero (CLEANZ) facility at IIT Hyderabad. Sub Head: Internal & External Electro-Mechanical Works for CLEANZ Facility.

Know all men by these presents that I/We_(Name of Contractor with address) do hereby execute Indemnity Bond in favour of Indian Institute of Technology (IIT) Hyderabad having their office at Kandi, Sangareddy-502284, Telangana, India and for the project .....
IIT Hyderabad under consideration. On this day of 2026

THIS DEED WITNESSETH AS FOLLOWS:

I/We, (Name of Contractor) hereby do indemnify and save harmless IITH having their office at Kandi- 502284, Sangareddy, Telangana, India from the following: -

1. Any third party claims, civil or criminal complaints/liabilities/material/life loss during site mishaps and other accidents such as snake bites etc or disputes and/or damages occurring or arising out of any mishaps at the site due to faulty work, negligence, faulty construction and/or for violating any law, rules and regulations in force, for the time being while executing/executed civil works byme/us.

2. Any damages, loss or expenses due to or resulting from any negligence or breach of duty on the part of me/us or any sub-Contractor/s if any, servants oragents.

3. Any claims by an employee of mine/ours or of sub-Contractors if any, under the workman compensation act and employers' Liability act, 1939 or any other law rules and regulations in force for the time being and any acts replacing and/or amending the same or any of the same as may be in force at the time and under any law in respect of injuries to persons or property arising out of and in the course of execution of the Contract work and/or arising out of and in the course of employment of any workman/employee.

4. Any act or omission of mine/ours or sub-Contractor/s if any, our/their servants or agent which may involve any loss, damage, liability, civil or criminalaction.

IN WITNESS WHEREOF THE HAS SET HIS/THEIR HANDS ON THIS DAY OF SIGNED AND DELIVERED BY THE AFORESAID IN THE PRESENCE OF WITNESSES:

1.
2.

ANNEXURE-III

ACCEPTANCE OF TENDER TERMS & CONDITIONS

(To be given on Company Letter Head)

Date:

To
The Executive Engineer-Electrical,
Indian Institute of Technology Hyderabad,
Kandi – 502 284,
Telangana, India.

Sub: Acceptance of Terms & Conditions of Tender.

Tender Reference No: _____

Name of work: - **Construction of Centre of Excellence for Centre of Clean Coal Energy & Net Zero (CLEANZ) facility at IIT Hyderabad. Sub Head: Internal & External Electro-Mechanical Works for CLEANZ Facility.**

Dear Sir,

1. I/ We have downloaded / obtained the NIT/ tender document(s) for the above mentioned 'NIT' from the web site(s) namely_____as per your advertisement, given in the above-mentioned website(s).

2. I / We hereby certify that I / we have read the entire terms and conditions of the tender documents (including all documents like annexure(s), schedule(s), etc.,), which form part of the contract agreement and I / we shall abide hereby by the terms / conditions / clauses contained therein.

3. The corrigendum(s) issued from time to time by your IITH too have also been taken into consideration, while submitting this acceptance letter.

4. I / We hereby unconditionally accept the tender conditions of above-mentioned tender document(s) / corrigendum(s) in its totality / entirety.

5. I / We certify that all information furnished by the our Firm is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then IIT Hyderabad shall without giving any notice or reason therefore or summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.

Yours Faithfully,
(Signature of the Bidder, with Official Seal

ANNEXURE-IV

Proforma for Authorization certificate from Approved OEM

Ref. No._____ Dated _____

To,
The Executive Engineer-Electrical,
Indian Institute of Technology (IIT) Hyderabad,
Kandi-502284, Sangareddy, Telangana, India. Dear Sir,

We_____who are established and reputable manufacturers/Technology Providers of_____having factory/ factories at_____*(address of factory)* do hereby authorize M/s _____*(Name and address of bidder)* to submit a bid, negotiate and receive the order from you against your Tender enquiry no. IITH/CMD/ELE/NIT/2025-26/XX for the work of

Construction of Centre of Excellence for Centre of Clean Coal Energy & Net Zero (CLEANZ) facility at IIT Hyderabad.

Sub Head: Internal & External Electro-Mechanical Works for CLEANZ Facility.

We ensure that we shall support/ facilitate the M/s_____on regular basis with technology/product updates for up-gradation / maintenance/repairing/servicing of the Compact Secondary Sub Station (CSS) and Light fixtures at IIT Hyderabad (if awarded) as per the terms and conditions mentioned in this tender document on direct payment basis from the successful bidder.

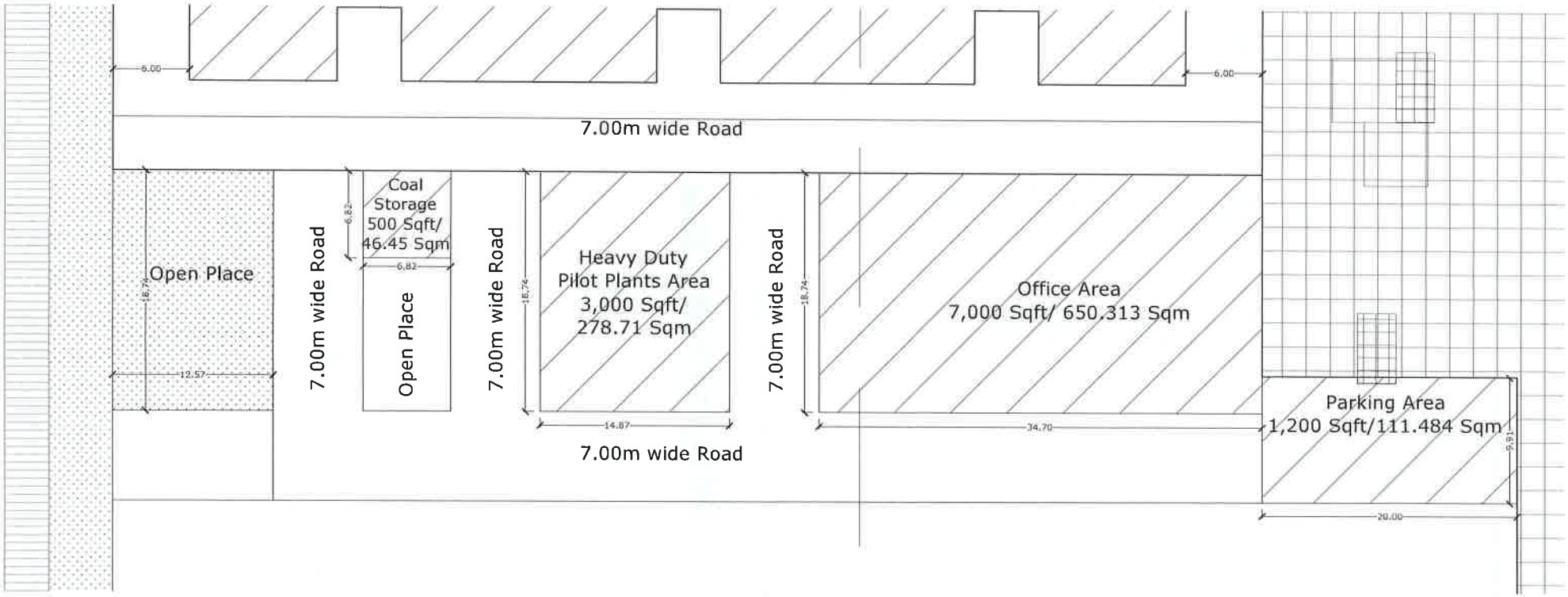
We hereby extend our full guarantee for the services offered by the above firm.

Yours faithfully,

(Name of authorised signatory with signature)

(Name of manufacturer with stamp)

Note: This letter of authority should be on the **letter-head of the OEM** and should be signed by an authorised person. It should be enclosed by the Bidder with the tender document.


6.00
7.00m wide Road
6.00
Open Place
16.79
12.57
7.00m wide Road
Coal
Storage
500 Sqft/
46.45 Sqm
6.82
6.82
Open Place
7.00m wide Road
18.74
Heavy Duty
Pilot Plants Area
3,000 Sqft/
278.71 Sqm
14.87
7.00m wide Road
7.00m wide Road
18.74
Office Area
7,000 Sqft/ 650.313 Sqm
34.70
Parking Area
1,200 Sqft/111.484 Sqm
5.57
20.00

12

(This page Intentionally Left Blank)