West Bengal State Electricity Distribution Company Limited
(A Government of West Bengal Enterprise)
Website: www.wbsedcl.in, CIN: U40109WB2007SGC113473

WBSEDCL

SECTION- I

NOTICE INVITING E-TENDER

NIeT. No.: WBSEDCL/DE (E)/MMHD/AOMC/EM/e-Tender/2025-26/08 **Date: 05/02/2026**

WEST BENGAL STATE ELECTRICITY DISTRIBUTION COMPANY LIMITED
(A Govt. of West Bengal Enterprise)
Mini- Micro Hydel Division,
Administrative Building, 2nd Floor, Dowhill Road,
P.O.-Kurseong, Dist: Darjeeling, Pin- 734203.
Email id: de.mmhd@wbsedcl.in
Ph.: (0354)2344456, Mobile: +91-9332788634/8145720057

NOTICE INVITING e-TENDER

NIeT. No.: WBSEDCL/DE (E)/MMHD/AOMC/EM/e-Tender/2025-26/08 Date: 05/02/2026

The Superintending Engineer (E), MMHD, Kurseong invites e-tender (Submission of Bid through online) on percentage basis for the works detailed below.

Sl. No.	Name of the work	Estimated Amount (Rs.) excl. of GST	Earnest Money Deposit (EMD) (Rs.)	Period of Contract	Name of the concerned office
1	Annual Operation and Maintenance contract of 1 x 1200kW T.G. Sets, their auxiliaries, electro-mechanical equipment and 3.3/11/33 KV switchyard including cleaning & up keeping of power house & fenced area of Fazi Hydel Power Station, WBSEDCL, Kurseong, Dist.-Darjeeling.	62,10,758/-	1,24,216/-	24 (Twenty-Four) months	Mini-Micro Hydel Division, Kurseong
2	Annual Operation and Maintenance contract of 2 x 1MW T.G. Sets, their auxiliaries, electro-mechanical equipment and 3.3/33 KV switchyard including cleaning & up keeping of power house & fenced area plus catering, Maintenance of pre-fabricated building of Rinchington Hydel Power Station, WBSEDCL, Darjeeling.	71,69,290/-	1,43,386/-	24 (Twenty Four) months	Mini-Micro Hydel Division, Kurseong
3.	Annual Operation and Maintenance contract of 3 x 200kW T.G. Sets, their auxiliaries, electro-mechanical equipment with 6.6KV switchyard including cleaning & up-keeping of power house & fenced area of Sidrapong Hydel Power Station, Darjeeling.	62,10,758/-	1,24,216/-	24 (Twenty Four) months	Mini-Micro Hydel Division, Kurseong
4.	Annual Operation and Maintenance contract of 2 x 1000kW T.G. Sets, their auxiliaries, electro-mechanical equipment and 3.3/11/33 KV switchyard including cleaning & up keeping of power house & fenced area of Little Rangit Hydel Power Station, WBSEDCL, Bijanbari, Dist.-Darjeeling.	80,23,723/-	1,60,475/-	24 (Twenty Four) months	Mini-Micro Hydel Division, Kurseong
5.	Annual Operation and Maintenance contract of 3 x 1MW T.G. Sets, their auxiliaries, electro-mechanical equipment and 3.3/33KV switchyard including cleaning, upkeeping& guarding of power house & fenced area of Mungpoo Kalikhola Hydel Power Station, WBSEDCL, Darjeeling.	70,52,537/-	1,41,051/-	24 (Twenty Four) months	Mini-Micro Hydel Division, Kurseong

Terms & Conditions of e-Tender:

1. Intending bidders may download the tender documents from the website http://wbtenders.gov.in directly with the help of Digital Signature Certificate (DSC).

2. Tender Cost /Tender Fees are abolished for e-Tendering. All participating bidders are therefore exempted from payment of Tender Fees.

3. Earnest Money Deposit shall be submitted through online mode through the e-Tendering portal (https://wbtenders.gov.in). All offline submission of payment instruments like Bank Draft, Pay Order etc. have been stopped for e-tender procurement. In case of unsuccessful/ rejected bids, the EMD shall be refunded directly from the e-Tendering portal. However for successful bids, the EMD will be refunded by WBSEDCL as per norms. Further details in respect of online payment as well as refund of EMD are provided within the EMD clause (Section-II, Instruction to Bidders, Clause No. 16).

4. **Qualifying Requirement/Eligibility Criteria** for participation in tender:

A. Technical:

i) The bidder must have successfully completed similar works in hilly region during last 7 (seven) years (i.e., up-to 31.01.2026). under the authority of State/Central Government, State/Central Government Undertakings, Statutory Bodies constituted under the statute of Central/State Government, subject to fulfilment of the following criteria:

(a) Three similar completed works each costing not less than 40% of the total estimated cost in a single contract,

(b) Two similar completed works each costing not less than 50% of the total estimated cost in a single contract,

(c) One similar completed work costing not less than 80% of the total estimated cost in a single contract.

ii) Copies of Work Orders along with Completion Certificates indicating Estimated Amount, Value of work-done, Date of completion of the work and detailed communication address along with contact number and e-mail id of the client should be submitted by the Bidder. Completion Certificate from the concerned Executive Engineer/District Engineer/Divisional Engineer or equivalent rank and above will be treated as valid credential.

iii) The word "similar nature of work" shall mean similar type of work like annual operation & maintenance of Hydro-electric Power Plants, Renovation/Erection/Repair & maintenance of Hydro-electric Power Plants.

B. Commercial:

i) The bidder's Minimum Average Annual Turnover (MAAT) for last 03 (three) Financial Years (2023-24, 2024-25 and 2025-26) shall not be less than 30% of the estimated cost.

ii) Working capital in the year preceding the year of bid submission shall not be less than 30% of the estimated cost. In case documents certifying credit facility from a scheduled Bank is submitted, the requirement shall be judged by adding available credit facility and working capital taken together.

iii) Audited Annual Financial Report for the last three financial years (2023-24, 2024-25 and 2025-26) to be submitted for verification in respect of bidders for whom audit of accounts is mandatory. For those whose audit of accounts is not mandatory, they shall submit copy of IT returns for the Assessment Years 2023-24, 2024-25 and 2025-26.

C. Documents/Declaration:

i) Copies of Work Orders along with Completion Certificates indicating Estimated Amount, Value of work-done, Date of completion of the work and detailed communication address along with contact number and e-mail id of the client should be submitted by the Bidder. Completion Certificate from the concerned Executive Engineer/District Engineer/Divisional Engineer or equivalent rank and above will be treated as valid credential.

ii) The bidders shall have to submit valid copies of Professional Tax deposit challans for the last six months, E.P.F. Registration, E.S.I. registration, GST Registration (GSTIN), PAN Card and Income Tax Return Acknowledgement for the Assessment Years 2023-24, 2024-25 and 2025-26, Trade License in respect of the prospective bidder for Proprietorship Firm, Trade License+ Partnership Deed for

Partnership Firm, Trade License + Incorporation certificate for Limited Company and Trade License + Society Registration copy for Co-operative Society.

iii) Audited Annual Financial Report for the last three financial years to be submitted for verification in respect of bidders for whom audit of accounts is mandatory and for those whose audit of accounts is not mandatory, they shall submit copy of IT returns for the Assessment Years 2023-24, 2024-25 and 2025-26,along with related enclosures.

iv) The bidder shall have to submit reports on the financial standing i. r. o. solvency of Bidder (Company/ Firm) as certified by bankers, audited annual reports on accounts with auditors' certificate for companies registered under Companies Act and Tax Audit Report for Partnership Firms for Financial Years 2023-24, 2024-25 and 2025-26.

v) Neither prospective Bidder nor any of the constituent partners had been barred to participate in any Tender by any Government Department/Semi-Govt. /Govt. Undertaking/ Enterprise etc. during the last 5 (five) years prior to the date of this NIT. Such debarring will be considered as disqualification towards eligibility. (A declaration in this respect has to be furnished by the prospective bidders).

vi) The prospective Bidders or any of their constituent partner shall neither have abandoned any work nor any of their contract have been rescinded during the last 5 (five) years. Such abandonment or rescission will be considered as disqualification towards eligibility. (a declaration in this respect has to be furnished by the prospective bidders).

5. Financial Offer:

The intending Bidders are required to quote the percentage rate online as per specified format/B.O.Q. The financial offer of the prospective bidder will be considered only if the Technical bid of the bidder is found qualified by the WBSEDCL. The decision of the WBSEDCL will be final and absolute in this respect. The list of qualified bidders of Technical Bid will be displayed in the website.

6. Participation in the Tender:

The prospective Bidder shall be allowed to participate in the tender either in the capacity of individual or as a partner of firm. If any of the bidders is found to have applied severally for a single job, all his offers will be rejected for that job. No agent is allowed to participate in the tender. Genuine contractor will only be allowed to participate in the tender. **The bidder may participate in any or all tenders mentioned in the notice separately.**

7. Bid Validity:

Bids shall remain valid for a period not less than 180 (one hundred eighty) days from the last date of submission of Bid. If the bidder modifies/withdraws the bid during the validity period of bid, the bid will be cancelled with forfeiture of Earnest Money Deposit (EMD).

8. Date and Time Schedule (for all the works under Sl. No. 1 to 5 above):

Sl. No.	Particulars	Date Time
1	Date of uploading of N.I.T. & other Documents (Online) (Publishing Date)	13.02.2026 at 10:00 Hrs.
2	Documents download start date (Online)	13.02.2026 at 10:00 Hrs.
3	Bid submission start date (Online)	13.02.2026 at 10:00 Hrs.
4	Documents download End Date	13.03.2026 up to 17:00 Hrs.
5	Bid Submission closing date (Online)	06.03.2026 up to 17:00 Hrs.
7	Technical Bid opening date (Online)	10.03.2026 at 12:00 Hrs.
8	Date of uploading list for Technically Qualified Bidder(Online)	To be intimated later
9	Financial Bid opening Date (Online)	To be intimated later

9.Site Visit:

The Bidder at the Bidder's own responsibility and risk is encouraged to visit and examine the site of works and its surroundings and obtain all information that may be necessary for

preparing the bid and entering into a contract for the work as mentioned in the Notice Inviting e-Tender. The cost of visiting the site shall be at the Bidder's own expense.

10. Cost of Bidding:

The intending Bidders shall clearly understand that whatever may be the outcome of the present invitation of Bids, no cost of Bidding shall be reimbursable by the WBSEDCL. The WBSEDCL reserves the right to accept or reject any offer without assigning any reason whatsoever and is not liable for any cost that might have been incurred by any Bidder at any stage of Bidding.

11. Change of quantity:

The quantity mentioned in the schedule of work is provisional. The company reserves the right to vary the quantities as may be necessary but such variation shall be limited to +25% (plus twenty five percent) of the contract price. Payment shall be made as per execution.

12. Mobilization advance:

No mobilization advance and secured advance will be allowed.

13. Cancellation of Tender:

The WBSEDCL also reserves the right to cancel the Tender due to unavoidable circumstances and no claim in this respect will be entertained.

14. Disqualification of Bidders:

Any canvassing in connection with the tender is strictly prohibited in the tender submitted by the Bidder. During scrutiny, if it comes to the notice of the tender inviting authority that the credential or any other paper found incorrect / manufactured / fabricated, that bidder will not be allowed to participate in the tender and that application will be rejected as per the norms. The eligibility of a Bidder will be ascertained on the basis of the documents submitted by the Bidder in support of eligibility criteria. If any document submitted by a Bidder is found incorrect / manufactured / fabricated or false at any stage, his Tender will be out rightly rejected and legal action will be taken against him as deemed fit as per the rule of land.

15. Rejection of Bid:

The WBSEDCL does not bind itself to accept the lowest bidder and reserves the right to reject any or all tender(s) or to split the whole work to more than one contractor without assigning any reason whatsoever. No conditional bid and/or incomplete bid will be accepted under any circumstance.

16. Amendment of the Bid Documents:

The tender inviting authority reserves the right to modify, amend or supplement the tender document. Any corrigendum, notification concerning this tender will be published in the e-tender portal https://wbtenders.gov.in and it will be treated as part and parcel of the tender. The bidders are, therefore, advised to follow the website for such corrigendum, notification etc.

17. The participating bidders may please note that the successful bidder shall have to execute and submit a Contract Agreement and an Indemnity Bond in the prescribed format before commencement of the work together with submission of required performance guarantee.

18. Prospective Bidders are advised to note carefully the minimum qualification criteria as mentioned in clause no. 4 above & in "Instructions to Bidders" stated in Section – "B" before tendering the bids. Other information as well as terms and conditions, which are not covered above, will be made available in 'Instruction to Bidders', 'General Conditions of Contract' and 'Technical Specification' of this tender.

19. Time will be the essence of the contract. The work will have to be complete within specified time span positively.

20. Official Communication:

All the important correspondence must be done through declared authorized email id with original scanned copy of documents/letter in company's letter head/pad. However hard copies should be submitted in the office through post/by hand. Any further information related to this tender may be available from the following office:

Office of the Divisional Engineer (E), Mini-Micro Hydel Division,
West Bengal State Electricity Distribution Company Limited (WBSEDCL),
Kurseong, Administrative Building, 2nd Floor, Dowhill Road,
P.O.-Kurseong, Dist: Darjeeling, Pin- 734203.
Email id: de.mmhd@wbsedcl.in
Website: www.wbsedcl.in

(Simit Subba)
Superintending Engineer (E)
Mini Micro Hydel Division

SECTION- II

INSTRUCTIONS TO BIDDERS

1. General guidance for e-Tendering:

Instructions / Guidelines for electronic submission of the tenders online have been annexed for assisting the contractors to participate in e-Tendering.

2. Registration of Bidder/Tenderer:

Any contractor willing to take part in the process of e-Tendering will have to be enrolled & registered with the Government e-Procurement System of West Bengal, through logging onto http://wbtenders.gov.in (the web portal) and the contractor is to click on the respective link on the web portal for necessary registration.

3. Digital Signature certificate (DSC):

Each contractor is required to obtain a Class-II or Class-III Digital Signature Certificate (DSC) for submission of tenders from the approved service provider of the National Informatics Centre (NIC) on payment of requisite amount. Details are available at the website stated in Clause 2 above. DSC is given as a USB e-Token.

4. Downloading of Tender documents:

The contractor can search & download N.I.T. / Tender Document(s) electronically through computers once he logs on to the website mentioned in clause 2 using the Digital Signature Certificate (DSC). This is the only mode of collection of Tender Documents.

5. Tender Fee:

Cost of Tender / Tender Fee are abolished for e-Tendering. All participating bidders are therefore exempted from payment of Tender Fee.

6. Eligibility Criteria for participation in the Tender (for all the wok under Sl. No. 1 to 5 as mentioned in Section-I of NIeT):

This will be as per clause no. 4 of the "Notice Inviting e-Tender" (Section-I).

7. Submission of Tenders:

General process of submission: Tenders are to be submitted online to the website stated in Cl. 2 above, in two folders at a time, one in Technical Proposal & the other in Financial Proposal, before the prescribed date & time using Digital Signature Certificate (DSC). The documents are to be uploaded in the form of virus scanned copy duly Digitally Signed. The uploaded Documents will get encrypted (transformed into non readable formats).

A. Technical proposal

The Technical proposal should contain scanned copies of the following in two covers (folders).

A-1. Statutory Cover containing three covers (folders) viz. (a) NIT (b) Draft/EMD & (c) Annexures/forms.

(a) **NIT folder** containing downloaded and uploaded copies (duly digitally signed) of the following:-

i. Notice Inviting e-Tender (NIeT) including General Conditions of Contract, Specification for works and Addenda/Corrigenda, if published

(b) **Draft/EMD folder** containing-

i. Copy of Internet Banking Payment Gateway/ Electronic Instrument (RTGS/NEFT) challans generated from the e-tendering portal/ Bank Guarantee as prescribed in the NIT,

ii. Scanned copy of BG of EMD, if required as prescribed in the NIT.

(c) **Annexures/Forms Folder (for all the wok under Sl. No. 1 to 5 mentioned in Section-I)** containing

i. Check List (as per **Annexure - I**)
ii. Certificate regarding Summary Statement of Average Annual Turnover according to Annual Audit Report on Accounts (as per **Annexure - II**)
iii. Pro-forma for undertaking to be submitted by the bidder (as per **Annexure - III**)
iv. Format of letter of bid (as per **Annexure - IV**)
v. Declaration by bidder (as per **Annexure - V** of Forms/Pro-forma Section)
vi. Contractor's Personnel for regular establishment (as per **Annexure –VI for all the work mentioned under Sl. No. 1 & 3 in Section-I of NIeT; as per Annexure-VII for the work mentioned under Sl. No. 2 only in Section-I of NIeT; as per Annexure-VIII for the**

work mentioned under Sl. No. 4 only in Section-I of NIeT and as per Annexure-IX for the work mentioned under Sl. No. 5 only in Section-I of NIeT)

vii. Statement of similar type of works executed during last 07 (seven) years (as per **Annexure - X**)

viii. Pro-forma for Other Allied Information of the Bidder(s) (as per **Annexure - XII**)

A-2 Non-statutory/Other statutory cover containing valid copies of documents regarding eligibility of bidders as stated in clause no. 4 of the "Notice Inviting e-Tender".

THE ABOVE STATED NON-STATUTORY/TECHNICAL DOCUMENTS SHOULD BE ARRANGED IN THE FOLLOWING MANNER

Sl. No.	Category Name	Sub Category Description	Details
A.	CERTIFICATES	CERTIFICATES	1. PAN 2. E.P.F. Document 3. E.S.I. Document 4. G.S.T. Document 5. P. Tax Document 6. Audited Annual Report on Accounts documents 7. ITR Document 8. Credit facility from any schedule bank to make short fall in working capital (as per **Annexure-XIII)**
B.	Company Profile	Company Details	1. Registration Certificate under Company Act (If any). 2. Registered Deed of partnership Firm/ Clause of Association & Memorandum. 3. Power of Attorney (For Partnership Firm/ Private Limited Company, if any). 4. Current Year no objection Certificate issued by the Assistant Register of Co-Op(S) (ARCS). 5. Valid bye laws are to be submitted by the Registered labour Co-operative(s), Engineers' Co-operative(s). 6. Valid Trade License.
C.	Credential	Credential	Copy of order/s along with completion Certificate/s for similar nature of work done as per the tender. Contract Order(s) alongwith completion certificate issued by the concerned Executive Engineer/District Engineer/Divisional Engineer or equivalent rank and above under the authority of State/Central Government, State/Central Government Undertakings and Statutory Bodies constituted under the statute of Central/State Government.
D.	Declaration	Declaration	Declaration of Black Listing / Holiday Listing (as per **Annexure- XI** of Annexure Section)

B. Financial Proposal (in one cover/folder)

It contains "Bill of Quantities" (BOQ).The rate to be quoted in the BOQ on "Percentage basis" in the space marked for quoting rate (either "Excess", "Less" or "At par" i.e. "0.00%"). Quoted rate will be encrypted in the B.O.Q. under Financial Bid.

Note: - *Failure of submission of any of the above mentioned documents (as stated in A1 and A2) will render the tender liable to summarily rejected for both statutory & non-statutory covers*.

****Process***

"Click" the check boxes beside the necessary documents in the "My Document" list and then "click" the tab "Submit Non Statutory Documents" to send the selected documents to Non-Statutory folder. Next Click the tab "Click to Encrypt and upload" and then click the "Technical" folder to upload the Technical Documents (Statutory documents).

****Opening & evaluation of Technical Proposal**

i. Technical proposals will be opened only for those bidders who will deposit their EMD as per the tender terms, by the authorized representatives of WBSEDCL from the website stated using their Digital Signature Certificates (DSC).

ii. Intending bidders may remain present if they so desire.

iii. Cover (folder) for statutory documents will be opened first & if found in order, cover (Folder) for non-statutory documents will be opened. If there is any deficiency in the statutory documents the tender will be summarily rejected.

iv. Decrypted (transformed in to readable formats) documents of the non-statutory cover will be downloaded & handed over to the authorized representatives of WBSEDCL.

v. Uploading of summary list of technically qualified bidders:

a) Pursuant to scrutiny & decision of the authorized representatives of WBSEDCL the summary list of eligible bidders & the serial number of work for which their proposal will be considered will be uploaded in the web portals.

b) While evaluation the authorized representatives of WBSEDCL may summon any of the bidder & seek clarification / information or bidder/s may be asked for producing original hard copy/s of any of the documents already submitted & if these are not produced within the stipulated time frame, their proposals will be liable for rejection.

****Opening & evaluation of Financial proposal**

i. Financial proposals of the bidders, declared technically eligible, will be opened electronically by the Tender Inviting Authority (authorized representative of WBSEDCL) from the web portal stated above on the prescribed date.

ii. The encrypted copies will be decrypted and the rates will be read out to the bidders remaining present at that time.

iii. After opening of the financial proposal, the preliminary summary result containing inter-alia, name of the bidder and the rates quoted by them will be uploaded.

iv. The bids will be evaluated on the basis of technical and financial proposal for the entire scope of work covered under this bid document.

v. The bidder whose offer has been accepted will be finalized after the evaluation procedure & it will be notified by the Tender Inviting Authority (authorized representative of WBSEDCL) through Letter of Intimation. The same will be made available/uploaded in the website https://wbtenders.gov.in.

vi. Decision of Tender Inviting Authority will be final and bound to every bidder.

vii. The selected bidder will be asked to produce the documents like Contract Agreement, Indemnity Bond, Performance Security (if applicable) and any other document on demand of WBSEDCL within a specified timeframe.

viii. WBSEDCL has the right to reject the tender if the bidder unable/disagree to produce the same.

ix. Conditional rebate, if any, offered by any bidder shall not be considered in Bid evaluation.

x. The Tender Accepting Authority may ask any of the bidders to submit analysis to justify the rate quoted by that bidder.

** Failure to comply with the requirements of bid submission will be at the bidder's own risk*. Bids, which are determined to be not substantially responsive to the requirement of the bidding document, will be rejected.*

8. Any documents if required regarding the above mentioned NIT shall have to be submitted by the bidders physically at the following Office:-

Office of the Divisional Engineer (E),
Mini- Micro Hydel Division,
WEST BENGAL STATE ELECTRICITY DISTRIBUTION COMPANY LIMITED,
Administrative Building, 2nd Floor, Dowhill Road,
P.O.-Kurseong, Dist: Darjeeling, Pin- 734203.

9. Parties Who May Bid:

a. Invitation of bid is open to the eligible bidders of Indian origin and the bid will be made on the basis of local competitive bids (LCD).

b. All materials to be supplied and services to be rendered under this contract shall be accepted from bidders fulfilling the eligibility/capability criteria.

c. A prospective bidder shall be allowed to participate in the job either in the capacity of individual or as a partner of the firm. If any of the bidders is found to have applied severally in a single job all his applications/bids will be summarily rejected for that job.

10. RESPONSTBILITY OF BIDDERS:

a. WBSEDCL will not assume any responsibility regarding information gathered, interpretations or conclusions made by the bidder or regarding information, interruption or deductions the bidder may derive from the data furnished by the WBSEDCL. Verbal agreement or conversation with any officer, employee of WBSEDCL either before or after the execution of the contracts, shall not affect or modify any of the terms or obligations contained in the contract.

b. It shall be the responsibility of the bidders to determine and to satisfy themselves by such means as they consider necessary or desirable as to all matters pertaining to this contract including in particular all factors that may affect the cost, duration and execution of the works. It must be understood and agreed that such factors have properly been investigated and considered while submitting the bid.

c. Claim, whatsoever, including those for financial adjustment to the contract awarded under these specifications and documents will not be entertained by the purchaser. Neither any change in time schedule of contract nor any financial adjustments arising thereof shall be permitted by the purchaser, which are based on the back of such clear information of its effect on the cost of the contract to the bidder.

d. The bidder is expected to examine carefully all instructions, conditions, forms, schedules terms, annexure, specifications and drawings in the bidding document.

11. COST OF BIDDING:

The bidder shall bear all cost associated with the preparation and submission of their bid and WBSEDCL in no case shall be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

12. CLARIFICATION OF BIDDING DOCUMENT:

Should there be any discrepancy or obscurity in the meaning of any clauses of the bid document or if there be any query of the intending bidder, the bidder shall set forth in writing such discrepancies, doubt, obscurity or queries and submit the same to WBSEDCL, marked to the Chief Engineer (Hydel), WBSEDCL before last date of submission of bids. The clarification given in the pre-bid discussions if any shall be final and binding on the bidders.

13. AMENDMENT OF BIDDING DOCUMENTS:

a. At any time prior to the deadline for submission of bids, WBSEDCL may, for any reason whether at his own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by issuing amendments. Any such amendment shall be part of the bidding document.

b. Such amendment(s) will be published on the same e-tender portal https://wbtenders.gov.in. Owner will bear no responsibility or liability arising out of non-pursuance of the same in time or otherwise by the bidder. In order to afford prospective bidders reasonable time in which to take the amendment in to account in preparing their bids, the owner may, at its discretion, extend the deadline for submission of bids.

Such amendments, clarification, etc. shall be binding on bidders and will be given due consideration by the bidders while they submit their bids and invariably enclose such documents as a part of the bids.

14. BID PRICES:

a. The bidder shall quote their price in the appropriate format in percentage Excess or At par (i.e., 0.00 %) or Less on the estimated price.

b. The quoted price should be FIRM. There will be no price variation during the pendency of the contract period or thereafter. Bidders are in no way allowed to get any escalation of price against this contract.

c. Prices indicated in the schedule of prices deemed to include all the levies/duties/taxes/cess & all other incidentals payable as per statute. **GST shall be paid as per statute.**

15. VALIDITY OF BID:

a. Financial Bid shall preferably be opened within 30 (Thirty) days from the date of opening of Techno-commercial Bid except for special circumstances.

b. The offer against the tender should remain valid for a minimum period of 180 days from the last date of submission of bid.

c. Prior to the expiry of the original validity period WBSEDCL may request extension in the period of validity for a further suitable period without any change in terms & conditions of the offer.

16. BID GUARANTEE/EARNEST MONEY DEPOSIT:

The bidder shall deposit the requisite earnest money as mentioned in Section-I of NIeT through online mode only. Following payment options are available for online payment of EMD, for the intending bidders,

i. Net-banking through Payment Gateway.

ii. RTGS/NEFT Payment: On selection of RTGS/NEFT as the payment mode, the e-procurement portal will show a pre-filled challan having the details to process RTGS/NEFT transaction. The bidder will print the challan and use the pre-filled information to make RTGS/NEFT payment using his bank account. Once the payment is made, the bidder will come back to e-procurement portal to continue the bidding process after expiry of a reasonable time to enable the RTGS/NEFT process to be completed.

iii. Submission of EMD through BG (if applicable): For submission of EMD in the form of BG, bidders will have to opt for EMD Exemption in e-tender portal and upload scanned copy of BG in the EMD exemption document upload section. Physical copy of BG shall be submitted at the office of tender inviting authority as per respective clauses of NIT.

EMD amount can be paid either in online mode or submitted through Bank Guarantee (BG) (if applicable) in full. Partial payment through online mode and remaining submission through BG is not allowed.

GENERAL INSTRUCTIONS FOR ONLINE PAYMENT:

i. The bidder will have to mandatorily pay through Net-banking facility once Net-banking mode is opted for payment.

ii. Status of NEFT/RTGS payment through Challan for a bid may take time for bank settlement which is updated in 24 Hrs. (approx.). As such bidders opting to pay through NEFT/RTGS mode shall make payment well before 24 Hrs. to avoid any complicacy.

iii. In case actual EMD as per NIT is more than the one shown in E-tender Portal, bidders will have to opt for NEFT/RTGS mode (challan mode). In that case the total actual EMD amount is to be paid only through NEFT/RTGS mode (challan mode).

iv. The bank account used for payment of EMD by the bidders shall be maintained operative until the completion of tendering process. All refunds will be made mandatorily to the Bank A/c from which the payment of EMD has been initiated.

REFUND OF EMD AMOUNT:

i. For unsuccessful bidders, EMD amount submitted against the tender shall be refunded automatically, through an automated process, by NIC portal on receipt of updated status of any bid.

ii. For successful bid(s), EMD will be refunded from WBSEDCL authority after completion of tendering process and following due procedures.

iii. The bank account used for payment of EMD by bidders shall be maintained operative until the completion of tendering process. All refunds will be made mandatorily to the Bank A/c from which the payment of EMD has been initiated.

iv. For any queries related to payments and refunds, bidders will have to communicate with ICICI Customer Support, viz., 033-40267512/13 since payment gateway facility used by E-tender portal is maintained by ICICI Bank.

The bidder shall not claim any interest on Earnest Money Deposit (EMD). Earnest Money in any other form or amount will not be accepted.

In case, WBSEDCL cancels the tender on his own for any reason, the EMD submitted by the bidders will be returned without any interest subsequently.

17. PROCESS TO BE CONFIDENTIAL:

a. After the opening of bids, information relating to the examination, clarification, evaluation and comparison of bids, and recommendations concerning the award of contract shall not be disclosed to bidders or other persons not officially concerned with such process.

b. Any effort by a bidder to influence WBSEDCL or other connected in the process of examination, clarification, evaluation and comparison of bids, and in decisions concerning the award of contract, may result in the rejection of his/their bid.

18. TIME SCHEDULE:

The basic consideration and the essence of the contract shall be the strict adherence to the time schedule specified in the NIT.

19. EVALUATION AND COMPARISON OF BIDS:

a. On examination of document submitted under different covers WBSEDCL will evaluate and compare the bid, determined to be substantially responsive at each step.

b. Evaluation of bid will include and will take into account:

i. Cost of construction/erection etc including taxes & duties etc.

ii. WBSEDCL shall evaluate and compare only the bids determined to be substantially responsive.

iii. The bids shall be evaluated on the basis of total price for the entire scope of work covered under this bid document.

iv. Evaluated bid price of all bidders shall be compared among themselves to determine the lowest evaluated bid and as a result of this comparison, the lowest bid will be selected for award of contract.

v. Conditional rebate, if any, offered by any bidder shall not be considered in Bid evaluation.

20. TAXES, DUTIES AND OTHER LEVIES:

a. The contractor shall be solely responsible for the taxes that may be levied on the contractor's persons or on earnings of any office employee and shall hold the WBSEDCL indemnified and harmless against any claims that may be made against the purchaser. The WBSEDCL does not take any responsibility what-so-ever regarding taxes under Indian Income Tax Act, for the contractor or his personnel. If it is obligatory under the provisions of Indian Income Tax Act, deduction of Income Tax at source shall be made by the purchaser.

b. All other duties/levies/CESS payable by the bidder shall be included in the bid price and no claim on this behalf will be entertained by the owner. **GST shall be paid as per statute.**

21. LAWS GOVERNING CONTRACT:

The contract shall be construed according to acts/laws in force in the country and shall be under the jurisdiction of Calcutta High Court.

22. LANGUAGE AND MEASURES:

All documents pertain to the contract including specifications, schedule, notice, correspondences, operating and maintenance instructions, drawings or any other writings be written in English language. The metric system of measurement shall be used exclusively in this contract.

23. CORRUPT OR FRAUDULENT PRACTISE:

WBSEDCL expects that bidders/contractors observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the owner defines for the purpose of this provision, the terms set forth below as follows:

a. **"Corrupt practice"** means the offering giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution, and

b. **"Fraudulent Practice"** means misrepresentation of facts in order to influence a procurement process of the execution of a contract to the detriment of the owner, and includes collusive practice among bidders (Prior to or after bid submission) designed to establish bid prices at artificial no-competitive levels and to deprive the owner of the benefits of free and open competition.

c. Will reject a proposal for award if the owner determines that the bidder recommended for award has engaged in corrupt or fraudulent practice in competing for the contract in question.

d. Will declare a Firm ineligible either indefinitely or for a stated period of time if owner any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing the contract.

24. SITE VISIT:

The bidders are strongly advised to visit and examine the sites of work and their surroundings and obtain for himself on his own responsibility all information that may be necessary for preparing the bid and submission of offer. The cost of visiting the sites shall be borne by the bidder.

25. INSURANCE:

The successful bidder on awarding of contract shall arrange, secure and maintain all insurance as may be pertinent to the work and obligatory in terms of law to protect the interests of WBSEDCL against all perils. The form & the limit of such insurance together with underwriting in each case shall be acceptable to WBSEDCL. However, irrespective of such acceptance the responsibility to maintain adequate insurance coverage at all times during the period of contract shall be bidder's alone.

26. CORRECTNESS AND SUFFICIENCY OF RATES QUOTED IN THE TENDER:

The bidder shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for work and the rates and prices stated in the schedule of works. The rates and price quoted shall cover all obligation of the bidder under the contract and all materials, labour etc. necessary for proper completion and maintenance of the work.

27. RIGHT TO ACCEPT OR REJECT ANY OR ALL OFFERS:

WBSEDCL reserves the right to accept or reject any bid and to cancel the bidding process and reject all bids at any time prior to award of contract without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders the reason for WBSEDCL"s action.

If the successful bidder will not enter into Contract Agreement and/or submit the performance security/contract performance and/or Indemnity Bond within stipulated time as mentioned in the Letter of Intimation, his EMD will be forfeited and the job may subject to be cancelled.

28. PENALTY FOR SUPPRESSION / DISTORTION OF FACTS:

If any Bidder fails to produce the original hard copies of the documents (especially Completion Certificates and audited balance sheets), or any other documents on demand of the Tender Committee within a specified time frame or if any deviation is detected in the hard copies from the uploaded soft copies or if there is any suppression, the tender committee will take action as deem fit against such defaulting Bidder.

29. AWARD OF CONTRACT:

The Bidder who's Bid would be accepted will be notified by the authorized Official of WBSEDCL through acceptance letter/Letter of award. The notification of award will constitute the formation of the Contract. The Agreement as per enclosed format in G.C.C. will incorporate all agreements between the Tender Accepting Authority and the successful bidder. All the tender documents including N.I.T. & B.O.Q. will be the part of the contract documents.

30. HOLIDAY LISTING:

The holiday listing policy of WBSEDCL shall be applicable to the participating bidders in the e-tendering in case of any deviation is found from normal contractual conduct. A declaration as per 'Annexure-VIII of Annexure section' of the tender document is to be submitted by the bidders.

31. CONTRACT AGREEMENT:

The agreement as per enclosed format specified in 'Annexure-XIII' of Annexure section' of this tender will incorporate all agreements between the tender accepting authority and the successful bidder. All the tender documents including NIeT and BOQ will be part of the agreement. After acceptance of Letter of Award, the successful bidder shall have to submit requisite copies of contract documents stated as per 'Clause No.-9 of General Conditions of Contract (GCC)'.

32. INDEMNITY BOND:

The contractor (successful bidder) shall have to produce Indemnity Bond as per 'Annexure-XIV of Forms/Proforma section' within the stipulated time.

33. CREATION OF VENDOR ID THROUGH WBSEDCL WEB PORTAL: All Participating bidder(s) shall have to mandatorily create vendor Id through WBSEDCL Web Portal Vendor Corner, **if not created earlier.**

SECTION- III

DEFINITION AND INTERPRETATION

A) APPLICATION:

Unless otherwise provided for the Contract Documents, these General Conditions shall apply to the work of all sections of the specifications attached herewith.

Whenever these words occur in the Contract Documents, they shall have the following meanings:

a) Owner / Company:

The Owner is West Bengal State Electricity Distribution Company Ltd., a Govt. of West Bengal Enterprise, having its Head office at Vidyut Bhawan, Block-DJ5, Sector-II, Salt Lake City, Kolkata- 700 091 and reference to throughout in the contact Documents By "Owner " or "Company". The word "Owner " or "Company" has been used in Conjunction with the words "as directed" ,"where directed", "when directed", "approved""Subject to approval" "satisfactory", "equal to" "proper " "determined by" shall mean the Director (HR) of the "Company " or his authorized representatives.

b) Engineer:

The "Engineer " means the Owner's authorized Engineer in charge for a work set forth in this General conditions of contract and other contract documents annexed hereto.

c) Engineer's Representative:

The Engineer's Representative shall be the person nominated by the Engineer in writing to act on his behalf.

d) Contractor:

The Contractor is the successful Tenderer who is awarded the contract by the owner to perform the work covered by the contract and shall be deemed to" include the Contractor's heirs, executors, administrators, representatives approved by the owner and will be referred to throughout in these documents.

e) Contract:

"Contract" means the Notice Inviting Tenders, Conditions of Tendering, Tender Form, General Conditions of Contract, Supplementary Conditions of Contract, Technical Specifications, Price Schedule of Items, Contract Agreements and Drawings and any other document which may be included at the time of signing of the Contract Agreement.

f) Drawings:

"Drawings" means the drawings referred to in the Contract and any modification of such drawings approved in writing by the engineer and such other Drawings as may from time to time be furnished or approved in writing by the Engineer.

g) Works:

"Works" means the works to be executed by the Contractor in accordance with the Contract which has also been referred to as "Contract Work".

h) Temporary works:

"Temporary works" means all the Temporary Work of every required kind in or about the execution, completion and maintenance of the Works by the Contractor at their own cost and risk.

i) **Contract price:**

"Contract Price" means the sum mentioned in the tender subject to such additions thereto or deductions there from as may be under the provisions hereinafter contained.

SECTION- IV

GENERAL CONDITIONS OF CONTRACT

1. **PROJECT LOCATIONs**:

(i) Fazi Hydel Power Station is located below Sepoydhura Tea Estate under Kurseong Sub-Division in the district of Darjeeling. The nearest Broad Gauge Railway Station is New Jalpaiguri Junction.

(ii) Rinchington Hydel Power Station is located at Cafebari near Kurseong in the district of Darjeeling. The nearest Broad Gauge Railway Station is New Jalpaiguri Junction.

(iii) Sidrapong Hydel Power Station is located at the foot-hills of Arya Tea Estate, near Darjeeling town via Bloomfield Tea Estate. The nearest Broad Gauge Railway Station is New Jalpaiguri Junction.

(iv) Little Rangit Hydel Power Station is located at Bijanbari in the district of Darjeeling. The nearest Broad Gauge Railway Station is New Jalpaiguri Junction.

(v) Mungpoo-Kalikhola Hydel Power Station is located below Namring tea Estate, Takdah in the district of Darjeeling. The nearest Broad Gauge Railway Station is New Jalpaiguri Junction.

2. **OBJECTIVE:**

The objective of the tender is to engage a Contractor on Annual Operation and Maintenance Contract for round-the-clock operation of Power House & Switchyard in three shifts and to check and rectify the defects satisfactorily in the shortest possible time for keeping the generation of the Power Houses unhampered irrespective of holidays or working hours. Also, the Agency has to take up the job of Catering, Maintenance and Upkeeping of Pre-fabricated Building of Rinchington Hydel Power Station. The agency should remain prepared to engage their work force at any time of the day round-the-clock and immediately on receipt of information from the Controlling Officer or his Representative.

3. **SCOPE OF WORK :**

(i) Fazi Hydel Power Station:

The Scope of work under this contract is broadly detailed as below:

a. Round-the clock operation of TG sets & Switchyard and all other electro-mechanical equipments in the power house like 1 no. 1200kW TG sets along with MIV, Governor, AVR etc., 3.3 KV switchgears, 33 KV & 11 KV Circuit Breakers with control panel, A.C. & D.C. Distribution Boards, 30 Volt battery and Battery charger and recording of hourly reading of various parameters like Generation data etc in daily Log sheets, maintaining of daily Log Book / Tripping Register to record system conditions along with alarm and indications/annunciation, maintaining daily record of battery conditions i.e. voltage, specific gravity, electrolyte level, hourly record of transformer oil and winding temperature etc.

b. Daily, Periodical, Annual Inspection & Maintenance (as and when required) of Turbo-Generator Set (1 x 1200kW) and auxiliaries along with all other equipments like AC/DC Panel, battery and charger, 3.3 KV Switchgear, 33 KV & 11 KV control

panel, unit control panel and other electro-mechanical equipments and accessories like MIV, Governor, etc. of Fazi Hydel Power Station.

c. Daily, Periodical, Annual Inspection & Maintenance & as and when required of 3.3/ 33 KV & 33/11 KV Switchyard equipments including Transformers and other accessories like 3.3kV, 11kV & 33kV Circuit Breakers, 33 KV & 11 KV isolators, 33 KV & 11 KV lightening arresters, 3.3 KV power cable, L.T. cable, cutting and clearing of grass & weeds in the switchyard etc along with up-keeping of the switchyard by cutting & removing of grass and weeds for the substations associated with Fazi Hydel Power Station.

d. Routine check-up and Round-the-clock Maintenance of LT lines both overhead and underground along with internal wiring for illumination of power house, dormitories, store sheds attached with Fazi Hydel Power Station.

e. Apart from the above jobs, the available manpower may also be utilized for store handling work at Fazi Hydel Power Station & other store related works as and when required.

f. The Contractor is also liable to attend the round-the clock Running and Breakdown maintenance of different electrical and mechanical systems immediately as and when required basis in connection with smooth running of power house of the Project. The available manpower shall be utilized as and when required for store handling work at store and other store related works also.

g. Cleaning and up-keeping of Power House within the fenced area is within the scope of work.

h. Any other Job of emergency nature and instructed verbally by the Controlling Officer or his representative and not specifically included in the annexure of schedule of maintenance work are also to be carried out by the contractor as part of normal maintenance work without any extra claim.

(ii) <u>Rinchington Hydel Power Station:</u>

The Scope of work under this contract is broadly detailed as below:

a. Round-the clock operation of TG sets & Switchyard and all other electro-mechanical equipments in the power house like 2 nos. TG sets along with MIV, Governor, AVR etc., 3.3 KV switchgears, 33 KV Circuit Breakers with control panel, A.C. & D.C. Distribution Boards, 30 Volt battery and Battery charger and recording of hourly reading of various parameters like Generation data etc in daily Log sheets, maintaining of daily Log Book / Tripping Register to record system conditions along with alarm and indications/annunciation, maintaining daily record of battery conditions i.e. voltage, specific gravity, electrolyte level, hourly record of transformer oil and winding temperature etc.

b. Daily, Periodical, Annual Inspection & Maintenance &as and when required of Turbo-Generator Sets (2 x 1 MW) and auxiliaries along with all other equipments like AC/DC Panel, battery and charger, 3.3 KV Switchgear, 33 KV control panel, unit control panel and other electro-mechanical equipments and accessories like MIV, Governor & AVR of Rinchington Hydel Power Station.

c. Daily, Periodical, Annual Inspection & Maintenance & as and when required of 3.3/ 33 KV Switchyard equipments including Transformers and other accessories like 33 KV & 11 KV circuit breakers, 33 KV isolators, 3.3 KV & 33 KV lightening arresters, 3.3 KV power cable, L.T. cable, cutting and clearing of grass & weeds in the switchyard etc along with up keeping of the switchyard by cutting & removing of grass and weeds for the substations associated with Rinchington Hydel Power Station.

d. Routine check-up and Round-the-clock Maintenance of LT lines both overhead and underground along with internal wiring for illumination of power house, dormitories, store sheds attached with Rinchington Hydel Power Station.

e. Apart from the above jobs, the available manpower may also be utilized for store handling work at Rinchington Hydel Power Station & other store related works as and when required.

f. The Contractor is also liable to attend the round-the clock Running and Breakdown maintenance of different electrical and mechanical systems immediately as and when required basis in connection with smooth running of power house of the Project. The available manpower shall be utilised as and when required for store handling work at store and other store related works also.

g. Catering, maintenance, cleaning and up-keeping of Power House within the fenced area and pre-fabricated building is within the scope of work whose details are given in section-VI.

h. Any other Job of emergency nature and instructed verbally by the Controlling Officer or his representative and not specifically included in the annexure of schedule of maintenance work are also to be carried out by the contractor as part of normal maintenance work without any extra claim.

(iii) <u>Sidrapong Hydel Power Station:</u>

The Scope of work under this contract is broadly detailed as below:

a) Round-the clock operation of TG sets & Switchyard and all other electro-mechanical equipments in the power house like 3 nos. TG sets along with MIV, Governor, AVR etc., 400V/11KV switchgears with control panel, A.C. & D.C. Distribution Boards, 30 Volt battery and Battery charger and recording of hourly reading of various parameters like Generation data etc in daily Log sheets, maintaining of daily Log Book / Tripping Register to record system conditions along with alarm and indications/annunciation, maintaining daily record of battery conditions i.e. voltage, specific gravity, electrolyte level, hourly record of transformer oil and winding temperature etc.

b) Daily, Periodical, Annual Inspection & Maintenance & as and when required of Turbo-Generator Sets (3 x 200kW) and auxiliaries along with all other equipments like AC/DC Panel, battery and charger, 400V/11KV Switchgear with control panel, unit control panel and other electro-mechanical equipments and accessories like MIV, Governor & AVR of Sidrapong Hydel Power Station.

c) Daily, Periodical, Annual Inspection &Maintenance & as and when required of 400V/11kV Switchyard equipments including Transformers and other accessories like 11 kV circuit

breakers, 400V/11KV isolators, 11 KV lightening arresters, 11 KV power cable, L.T. cable, cutting and clearing of grass & weeds in the switchyard etc along with upkeeping of the switchyard by cutting & removing of grass and weeds for the substations associated with Sidrapong Hydel Power Station.

d) Routine check-up and Round-the-clock Maintenance of LT lines both overhead and underground along with internal wiring for illumination of power house, dormitories, store sheds attached with Sidrapong Hydel Power Station.

e) Apart from the above jobs, the available manpower may also be utilized for store handling work at Sidrapong Hydel Power Station & other store related works as and when required.

f) The Contractor is also liable to attend the round-the clock Running and Breakdown maintenance of different electrical and mechanical systems immediately as and when required basis in connection with smooth running of power house of the Project. The available manpower shall be utilized as and when required for store handling work at store and other store related works also.

g) Cleaning and up keeping of Power House within the fenced area is within the scope of work.

h) Any other Job of emergency nature and instructed verbally by the Controlling Officer or his representative and not specifically included in the annexure of schedule of maintenance work are also to be carried out by the contractor as part of normal maintenance work without any extra claim.

(iv) <u>Little Rangit Hydel Power Station:</u>

The Scope of work under this contract is broadly detailed as below:

a. Round-the clock operation of TG sets & Switchyard and all other electro-mechanical equipments in the power house like 2 nos. TG sets along with MIV, Governor, AVR etc., 3.3 KV switchgears, 33 KV & 11 KV Circuit Breakers with control panel, A.C. & D.C. Distribution Boards, 30 Volt battery and Battery charger and recording of hourly reading of various parameters like Generation data etc in daily Log sheets, maintaining of daily Log Book / Tripping Register to record system conditions alongwith alarm and indications/annunciation, maintaining daily record of battery conditions i.e. voltage, specific gravity, electrolyte level, hourly record of transformer oil and winding temperature etc.

b) Daily, Periodical, Annual Inspection & Maintenance &as and when required of Turbo-Generator Sets(2 x 1 MW) and auxiliaries along with all other equipments like AC/DC Panel, battery and charger, 3.3 KV Switchgear, 33 KV & 11 KV control panel, unit control panel and other electro-mechanical equipments and accessories like MIV, Governor & AVR of Little Rangit Hydel Power Station.

c) Daily, Periodical, Annual Inspection & Maintenance & as and when required of 3.3/ 33 KV & 33/11 KV Switchyard equipments including Transformers and other accessories like 33 KV & 11 KV circuit breakers, 33 KV & 11 KV isolators, 33 KV & 11 KV lightening arresters, 3.3 KV power cable, L.T. cable, cutting and clearing of grass & weeds in the switchyard etc along with up-keeping of the switchyard by

cutting & removing of grass and weeds for the substations associated with Little Rangit Hydel Power Station.

d) Routine check-up and Round-the-clock Maintenance of LT lines both overhead and underground along with internal wiring for illumination of power house, dormitories, store sheds attached with Little Rangit Hydel Power Station.

e) Apart from the above jobs, the available manpower may also be utilized for store handling work at Little Rangit Hydel Power Station & other store related works as and when required.

f) The Contractor is also liable to attend the round-the clock Running and Breakdown maintenance of different electrical and mechanical systems immediately as and when required basis in connection with smooth running of power house of the Project. The available manpower shall be utilized as and when required for store handling work at store and other store related works also.

g) Cleaning and up-keeping of Power House within the fenced area is within the scope of work.

h) Any other Job of emergency nature and instructed verbally by the Controlling Officer or his representative and not specifically included in the annexure of schedule of maintenance work are also to be carried out by the contractor as part of normal maintenance work without any extra claim.

(v) <u>Mungpoo-Kalikhola Hydel Power Station:</u>

The Scope of work under this contract is broadly detailed as below:

a. Round-the clock operation of TG sets & Switchyard and all other electro-mechanical equipments in the power house like 3 nos. TG sets along with MIV, Governor, AVR etc., 3.3 KV switchgears and 33 KV Circuit Breakers with control panel, A.C. & D.C. Distribution Boards, 110Volt Battery Bank and Battery charger and recording of hourly reading of various parameters like Generation data etc in daily Log sheets, maintaining of daily Log Book / Tripping Register to record system conditions alongwith alarm and indications/annunciation, maintaining daily record of battery conditions i.e. voltage, specific gravity, electrolyte level, hourly record of transformer oil and winding temperature etc.

b. Daily, Periodical, Annual Inspection &Maintenance &as and when required of Turbo-Generator Sets(3 x 1 MW) and auxiliaries along with all other equipments like AC/DC Panel, battery and charger, 3.3kV/33kV Switchgear, Control Panel, Unit Control Panel and other electro-mechanical equipments and accessories like MIV, Governor & AVR of Mungpoo Kali-khola Hydel Power Station.

c. Daily, Periodical, Annual Inspection &Maintenance & as and when required of 3.3/ 33 KV Switchyard equipments including Transformers and other accessories like 33 KV Circuit Breakers, 33 KV, 33KV Lightening Arresters, 3.3 KV power cable, L.T. cable, cutting and clearing of grass & weeds in the switchyard, etc. along with up-keeping of the switchyard by cutting & removing of grass and weeds for the substations associated with Mungpoo-Kalikhola Hydel Power Station.

d. Routine check-up and Round-the-clock Maintenance of LT lines both overhead and underground along with internal wiring for illumination of power house, dormitories, store sheds attached with Mungpoo-Kalikhola Hydel PowerStation.

e. Apart from the above jobs, the available manpower may also be utilized for store handling work at Mungpoo-Kalikhola Hydel Power Station & other store related works as and when required.

f. The Contractor is also liable to attend the round-the clock Running and Breakdown maintenance of different electrical and mechanical systems immediately as and when required basis in connection with smooth running of power house of the Project. The available manpower shall be utilised as and when required for store handling work at store and other store related works also.

g. Cleaning and up-keeping of Power House within the fenced area is within the scope of work.

h. Any other Job of emergency nature and instructed verbally by the Controlling Officer or his representative and not specifically included in the annexure of schedule of maintenance work are also to be carried out by the contractor as part of normal maintenance work without any extra claim.

4. SUBMISSION OF TENDER:

Please refer to sl. No. 7 of Instruction to Bidders.

5. PERFORMANCE GUARANTEE:

a. For the due performance of the Contract, the Contractor shall, within 30 days from the receipt of Letter of Award but not later than the date of signing of Contract Agreement, furnish to the WBSEDCL, a performance guarantee for an amount equal to 10% (Ten percent) of the Contract price. The cost of complying with the requirements of this clause shall be borne by the Contractor, unless the Contract otherwise provides.

b. The performance guarantee provided by the Contractor in the form of an irrevocable Bank Guarantee, shall be in favour of WEST BENGAL STATE ELECTRICITY DISTRIBUTION COMPANY LIMITED issued by any scheduled Bank or Bank branch in India & licensed to do business in India which is acceptable to the purchaser.

c. The proceeds of the performance guarantee shall be payable to WBSEDCL as compensation for any loss, resulting from Contractor's failure to complete his obligations under the Contract.

d. The performance guarantee shall be valid until 30 days after the date of issue of defect liability certificate. No claim shall be made against the performance guarantee after the issue of the defect liability certificate and the performance guarantee will be discharged and returned to the Contractor thirty days after the defect liability period.

e. The Contractor shall at his own cost, get the validity period of Bank guarantee extended from time to time till the completion of 30 days after Defect Liability period, as per the provision of Contract and shall furnish the extended revised

bank Guarantee one month before the expiry date of the Original Bank Guarantee or any extension thereof. In case the extended /revised Bank Guarantee is not received by the WBSEDCL within the specified period, the WBSEDCL, entirely at its discretion, shall be at liberty to en-cash the aforesaid Bank Guarantee.

f. **Additional Performance Security:**

i. An Additional Performance Security @ 10% of the tendered amount shall have to be submitted by the successful bidder in the form of a Bank Guarantee from any scheduled bank approved by RBI as per the enclosed format before issuance of the work order if the accepted bid value is in the range of -20% to -50% of the estimated rate.

ii. An Additional Performance Security @ 20% of the tendered amount shall have to be submitted by the successful bidder in the form of a Bank Guarantee from any scheduled bank approved by RBI as per the enclosed format before issuance of the work order if the accepted bid value is in the range of -50% to -80% of the estimated rate.

6. Refund of Earnest Money:

Refund of Security deposit shall be subject to Company's right to deduct/appropriate its dues against the contractor or under this contract or any other contract. The performance Bond/Security Deposit for all type of Bids shall be released only after satisfactory expiry of the guarantee period and certified as such by the controlling officer of the work upon written request by the contractor under following conditions:

i. For unsuccessful bidders, EMD amount submitted against the tender shall be refunded automatically, through an automated process, by NIC portal on receipt of updated status of any bid.

ii. For successful bid(s), EMD will be refunded from WBSEDCL authority after completion of tendering process and following due procedures.

iii. The bank account used for payment of EMD by bidders shall be maintained operative until the completion of tendering process. All refunds will be made mandatorily to the Bank A/c from which the payment of EMD has been initiated.

iv. For any queries related to payments and refunds, bidders will have to communicate with ICICI Customer Support, viz., 033-40267512/13 since payment gateway facility used by E-tender portal is maintained by ICICI Bank.

The bidder shall not claim any interest on Earnest Money Deposit (EMD). Earnest Money in any other form or amount will not be accepted.

In case, WBSEDCL cancels the tender on his own for any reason, the EMD submitted by the bidders will be returned without any interest subsequently.

7. Forfeiture of Earnest money/Bid guarantee:

Earnest money/Bid guarantee shall be forfeited in case of following:

a. If during the period of validity, the bidder withdraws/modifies its bid as a whole or in part.

ii. If the bidder deviates from any clarification/confirmation given by him subsequent to submission of his bid;

In case of successful bidder, if the Bidder fails:

i. To accept LOI/Order unconditionally and sign contract

ii. To furnish the contract performance bond wherever applicable.

8. DEFECT LIABILTY PERIOD:

The term "defect liability period" shall mean the period of 12 (twelve) months from the date of completion of the work. If any defect is found within the defect liability period the contractor shall be liable to rectify the defects at their own cost and responsibility. Defects/rectification work so notified shall have to be attended and completed satisfactorily within the specified date or as deemed fit by the Controlling Officer. For faithful & due fulfillment of all obligations, this defect liability period shall be covered by Security Deposit submitted by the contractor. After completion of defect liability period, and on completion of satisfactory rectification of defects, if any reported within the defect liability period, and on receipt of the application from the contractor the controlling Officer of the work will recommend release of security deposit.

9. MANNER OF EXECUTION OF CONTRACT AGREEMENT:

The successful bidder has to submit acceptance of the LOI/LOA within 10(ten) days from the date of issue of the Letter of Intent/order. The successful bidder shall be required to execute an Agreement on a non-judicial stamp paper of Rs. 100/- with the company with all related documents for satisfactory execution of the work. The agreement shall be signed on a date and time to be mutually agreed upon in the office of the controlling officer of the work and the same has to be signed by both the parties within 30 days from date of acceptance of the order. Power of attorney of the authorized representative of the contractor who will sign the contract agreement on behalf of the contractor is to be submitted before signing of the agreement. The agreement shall be signed in original and five photo copies. The original agreement shall be retained by the Company and a copy will be handed over to the Contractor.

10. CHANGE OF QUANTITY:

The quantity mentioned in the schedule of work is provisional. The company reserves the right to vary the quantities as may be necessary but such variation shall be limited to +25%(plus twenty five percent) of the contract price. Payment shall be made as per execution.

11. Variation, Omission, Addition & Alteration:

The Contractor shall not modify the work except under direction in writing by the Company. The quantities provided in the Schedule of work are provisional only, which may vary up to any extent or may be deleted altogether. The quoted rate of each item shall remain firm till completion of contract. The Company reserves the right to alter, amend, and omit or otherwise vary the quantities as may be necessary but such variation will be limited to +25% (plus twenty five percent) of the contract price. Payment shall be made

as per actual execution.

12. MATERIAL AND WORKMANSHIP:

All the work shall be executed with the materials as specified and with best workmanship and/or in the best manner to the satisfaction of the Engineer-in-Charge/ Controlling Officer.

13. EXTENSION OF TIME:

If the work is suspended due to reasons beyond the control of the contractor, the contractor shall immediately give notice in writing within 7(seven) days to the controlling officer for each occasion. On receipt of such notice, the controlling officer may verify the matter and agree to extend the completion period as may be reasonable but without prejudice to other terms and conditions of the contract as the case may be if the reasons behind the suspension of work are found to be justified.

14. LIQUIDATED DAMAGES:

If the contractor fails to complete the work successfully within the time specified in the contract or any extension thereof, the company shall recover from the contractor as liquidated damages a sum of half percent (0.5%) of the contract value of works for each calendar week of delay or part thereof of delay subjected to Force Majeure. The total recovery against liquidated damage shall not exceed ten percent (10%) of the contract value of the work. An extension of time without imposition of liquidated damage, may be granted for delay in execution of work provided there is no fault whatsoever on the part of the contractor. Such extension may only be granted on the basis of application to be submitted by the contractor who has to establish that the extension of time required by him was not due to his fault.

15. FORCE MAJEURE:

The Contractor shall not be liable to pay any liquidated damage for delay/failure to perform the contract for reasons of force majeure such as acts of God, acts of the public enemy, acts of Governments, fire, flood, epidemics, quarantine restriction, strikes, freight embargos and provided that the contractor shall within 10(ten) days from the beginning of such delay notify the Company in writing of the cause of delay. The Company shall verify the facts and grant such extension as found to be justified without imposing liquidated damage.

The department shall not be responsible or liable to pay any compensation for any interruption in your work at the site due to strike, lockout, riot earthquake, flood, cyclone or civil commotion or any other force of accident due to any reason beyond control. The department shall not be held responsible to or liable to pay for any interruption in your work at the site arising out of resistance from the local public due to any resistance towards work.

16. LIABILITY OF ACCIDENTS AND DAMAGE:

The Contractor shall be responsible for the loss, damage or depreciation of the Company's materials while in their custody and until the same is taken over by the Company. Until the completed work is taken over by the Company the contractor shall also be liable for and shall indemnify the Company in respect of all injury to person or damage to properly resulting from the negligence of the contractor or his workmen or sub-contractor or from

defective workmanship etc.

17. SETTLEMENT OF DISPUTES:

All disputes concerning question of act arising under the contract shall be decided by the owner/company on receipt of written appeal by the contractor. Any dispute or differences arising out of or in connection with this contract shall to the extent possible be settled amicably and where settlement cannot be reached then such disputes shall be subject to settlement under the jurisdiction of Calcutta High Court.

18. SAFETY RULES:

The bidder shall also provide necessary fencing and lights to protect the public from accident.

Fire extinguishers shall be kept by the bidder at the side of works where there is risk of fire hazard.

Adequate washing facilities shall be provided near the place of work.

When the work is done near any place where there is risk of drowning, all necessary equipment shall be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provisions shall be made for prompt first aid treatment of all injuries likely to be sustained during the course of work.

These safety provisions shall be brought to the notice of all concerned by displaying on a notice board at a prominent place at the work spot. The persons responsible for compliance of code shall be named by the bidder.

To ensure effective enforcement of the rules & regulations relating to safety precautions, the arrangement made by the bidder shall be open to inspection by the employer and WBSEDCL.

Notwithstanding the above clauses there is nothing in those to exempt the bidder from the operations of any other Act or Rule in force in the Republic of India.

All storage, handling & use of flammable liquids shall be under the supervision of qualified persons.

First aid arrangements with the degree of hazard and with no. of workers employed shall be maintained in a readily accessible place throughout the whole of working hours.

Reporting of Accident:

All accidents, major or minor, must be reported immediately to WBSEDCL and the contractor will provide first aid to the injured person immediately. The injured person shall report to the First Aid Station alongwith the "Injured on work" form as per appropriate pro-forma duly filled in quintuplicate and submit to the Medical Officer of the First Aid Station.

Serious Injuries:

In case of serious injuries, the following procedure shall be adopted by the contractor to provide first aid at his own First Aid Station.

To take the injured person to the hospital alongwith the "Injured on work" form duly filled in.

To report the accident to WBSEDCL.

Fatal Accident:

Fatal accidents must be reported immediately to WBSEDCL as well as to the Police.

Penalty:

Failure to observe the Safety Rules will make the contractor liable to penalty by way of suspension of work and termination of contract.

Adequate arrangement for proper lighting & guarding shall be made at the work site.

19. RISK PURCHASE :

In the event of failure of the contractor to execute the work timely and/or to the satisfaction of WEST BENGAL STATE ELECTRICITY DISTRIBUTION COMPANY LTD., the order/Letter of Award may be terminated prematurely and the balance work may be got done through any other agency at risk and cost of the contractor.

20. EXECUTION OF INDEMNITY BOND:

Before Commencement of the actual execution of the works, the agency has to execute an indemnity bond as per annexed proforma in a Non - judicial stamp paper of Rupees one hundred.

21. ISSUANCE OF MATERIALS

Consumables like jute, old cloth, cotton waste etc. would have to be arranged by the successful bidder in addition to welding electrodes, grease distilled water, Kerosene oil/Petrol oil/HSD, petroleum jelly etc. for cleaning purposes which will be necessary during execution of the contract. However, the department will arrange other consumables Spares, which will be necessary for fulfillment of the instant contract.

Daily Log sheets, Log Books/ Registers shall be provided by the Company.

The company may provide special type of welding electrode, if required, for the maintenance during the period of contract. However, all normal electrodes, Oxy-Acetylene gas and its accessories & welding machine etc. shall have to be arranged by the contractor.

22. TOOLS & TACKLES

All tools & tackles except special tools shall have to be provided by the Contractor. The Contractor may gather a list of special tools and tackles available with the Company and should remain equipped to supply tools required for doing any job as and when necessary so that work does not hamper. The Company shall provide EOT Crane for use during such period of contract. The operation and maintenance of the EOT Crane will be the responsibility of the agency. The Turbine oil filter machine may be provided by the company free of cost for filtration of the Turbine Oil provided that the operator is arranged by the Contractor. The Contractor should submit a list of tools & tackles available with them. Following are the probable required tools:-

(i) Meggar- 500 Volt, 1000 Volt, 2500 Volt
(ii) Plier, Slide wrench of different sizes
(iii) D.E. Spanner, Ring Spanner, Screw Driver (of different sizes)
(iv) Torch with Battery, ¾ cells-2Nos
(v) Multimeter
(vi) Hydrometer

23. COMMUNICATION

All sorts of communication expenses incurred while making calls through mobile phones among power house, switchyard, forebay tank, intake etc shall have to be borne by the contractor.

24. TRANSPORTATION

All sorts of transportation of the personnel, tools and tackles, consumables etc. of the contractor and the spares/consumables supplied by the Company for attending normal and emergency job shall be made by the contractor through its own arrangement.

25. MATERIAL HANDLING

All sorts of material handling arrangement for shifting the equipments, materials, spares etc. in connection with maintenance work from WBSEDCL site store to the work site are to be made by the contractor. Mobile Crane/EOT Crane/ Slings/ D-Shackles etc. as available in the Power House may be utilized by the contractor with prior concurrence of the Controlling Officer / Engineer-in-Charge. However, the Crane operator has to be arranged by the agency to execute the contract.

26. ACCOMODATION & ELECTRICITY

The Contractor shall have to arrange for accommodation of the Technical workman at site. The Company may provide accommodation to the Contractor's Technical workmen at site dormitory, subject to availability of rooms and toilet, bath and kitchen space during the contract period. If the Company provides accommodation in that case realization of house rent (H/R) @ 7% (seven percent) of Basic wages of each labour shall be deducted from the bill. The charges for electricity shall have to be borne extra as per Company's rates against bills raised by concerned Group Electric Supply/customer care centre. The electric connection is to be arranged by the contractor, if not already existing in the premises.

27. LABOUR CONTRACT

The Contractor shall have to comply with all statutory obligations towards engagement of contract labours for the work and any deviation / non-compliances shall be liable for penal actions as per relevant Act.

This shall be mandatory on the part of the entrusted contractor to furnish following documents for scrutiny / verification of compliances of different relevant statutory obligations of the department.

i. Copy of Photo Employment Card: Each contract labour shall be issued with Employment card from the date of execution of the work.

ii. Labour License: On receipt of work order from the department the entrusted contractor shall have to obtain Labour License from the Labour department.

iii. Work Permit: Before undertaking the work, the entrusted contractor shall have to obtain work permit from the department to be issued by an official not below the rank of Assistant Engineer containing the list of contract labourers to be engaged for the work having requisite license/ authorization to do such work. The work permit shall also contain certification regarding compliances of requisite safety precautions in regard to the work.

iv. The entrusted contractor in the event of engagement of technical personnel shall have to submit the valid / authenticated work permit/ License of the technical personnel for engagement in such type of work. This is to be submitted along with the Part-I of the bid.

v. Submission of P.F. Challan etc: The Copy of online receipt of monthly Electronic Challan cum Return (ECR) shall have to be submitted along with monthly bill. The agency shall have to submit Annual Account Slip in respect of each and every labourer for the concerned accounting year.

vi. Acquittance Roll: The entrusted Contractor shall have to submit copy of Acquittance Roll containing the names and details of the contract labourers, no. of days worked, amount of P.F. subscription deducted and wages paid and dated receipt thereof of the same by each contract labourer along with the monthly bill.

vii. Payment of Minimum Bonus: Each Contract labour shall be paid with the minimum bonus as per payment of Bonus Act and authenticated document in regard to receipt thereof is to be submitted to the department.

viii. Medical Insurance: Each Contract labour shall be paid an amount @3.25% of the wages being medical insurance if the area is not covered under ESI Act and ESI subscription @3.25% is to be deposited to the ESI department.

ix. Off-days: Each Contract labour should be given statutory off days as per Act.

x. The contractor shall release the payment of wages in presence of an official under MMHD wing to witness and certify subsequently at the time of submission of monthly bill.

xi. The Agency must ensure payment of wages to each contract labours and not less than the rates of minimum wages as fixed for respective category of employment by the Labour department, Government of West Bengal. Minimum wages based on the Half-Yearly enhancement have been considered and the agency shall have to pay the wages as time to time revised by the Labour department, Government of West Bengal.

28. SAFETY EQUIPMENTS:

i. The contractor should provide all sorts of safety tools and equipments to their working personnel as stated below:

ii. Gloves of appropriate voltage rating while working at switchyard or on electrical equipment.

iii. Helmet (ISI standard).

iv. Earth link Rod (ISI standard).

v. Safety belt while climbing on high structure (ISI standard).

vi. Gumboot while working in switchyard or on electrical equipment (ISI standard).

vii. Torch ¾ Cells-2nos.

viii. Any other items required as per rules.

29. RISK AND INSURANCE:

WBSEDCL will be in no way held responsible/ liable for any accident/ mishap/, if caused to any personnel of the agency during execution of work. Any loss/ damage caused to any equipment of the Company during execution of the work will have to be compensated by the agency to the entire satisfaction of the Controlling Officer of the work. The contractor

shall ensure for workmen's compensation with an insurer approved by the owner and shall continue such insurance during the whole of the time regarding any persons employed by him on the works and shall produce to the Engineer-In-Charge / Controlling Officer such policy or policies of insurance and receipt for payment of the current premium. If the contractor fails to comply with above statutory obligation, the agency shall be liable for necessary action as per relevant provision of Workmen's Compensation Act, 1923.

30. SUPERVISION/ MANPOWER

The supervision of the work will be done by the Company through an officer, not below the rank of Assistant Engineer. The Site-in-charge of the Contractor should have minimum qualification of Diploma in Engineering in Electrical / Mechanical from the State council and possess sufficient experience.

The Contractor should also provide sufficient number of technically skilled and unskilled personnel to fulfill their obligation for execution of the operation and maintenance of Power House and switchyard equipments both inside and outside the Power House as detailed in the scope of work and as per schedule of maintenance indicated therein. However, the Contractor may have to work simultaneously in more than one work front, if the situation so demands, and the agency should arrange its manpower in such a way that such eventualities may also be taken care of by them without delay.

A minimum manpower must be maintained/assured **applicable as per Annexure-VI, or VII or VII** otherwise a deduction may be done as per the discretion of the Controlling Officer.

Operation Duty Shift: The normal duty in three shifts to be maintained at 8 (eight) hours per shift as below:

Morning Shift	6.00AM to 2.00PM
Evening Shift	2.00PM to 10.00PM
Night Shift	10.00PM to 6.00AM (Next day)

General Maintenance Shift: The normal working hours for general maintenance shift will be from 9.00AM to 6.00PM with 1(one) hour recess (13.00hrs. to 14.00hrs.). The service of the agency may be required at odd hours of the day, i.e. other than normal working hours and that shall have to be attended to by the agency whenever such intimation is received. No additional payment will be made for such urgent maintenance work in odd hours.

31. PERIOD OF CONTRACT AND RATE

The Contract Period will be for 02(Two) year and the rate quoted by the agency shall be firm and net. The Contract Period may be extended/ renewed for a further period of one year based on satisfactory performance & as per agreed rate.

32. PAYMENT

Payment will be made through monthly bills, for which the agency will have to submit its claims through bills in triplicate with detailed work report during the month along with consumption statement of departmental materials issued to them. Pro-rata deduction on monthly bill will be made for not attending the Inspection, operation & Maintenance job by

the personnel of agency on any day during that month. This deduction will be exclusive of any other Penalty/ LD/ Deduction.

The bill in triplicate signed by supervisor and Site-in-Charge are to be submitted to the Controlling Officer of the job within 10 (ten) days of the next month for releasing the payment in due course.

33. COMPLETNESS OF TENDER

Tenders shall be complete in all respect and include all credentials and documentary evidence even though not specified in the specifications, schedules etc., but which are essential for the completion of the contract. The intending tenderers shall be responsible for properly coordinating the work and the offer should be complete in all respect.

34. PERMIT , FEES AND TAXES

The bidder shall include in his tender prices, all Taxes and Duties (except GST) applicable for execution of work. He shall obtain and pay for all permits, licenses, or other privileges necessary to complete the work. The copy of certificate shall be delivered to the Engineer-in-charge/Controlling Officer.

WC Tax, Income Tax etc. as applicable shall be deducted from your bill from time to time. GST as applicable shall be reimbursed at the prevailing rate against submission of documentary evidence.

35. PENALTY/ LIQUIDATED DAMAGES

In case the operation and maintenance work gets affected adversely on any date due to paucity of or incompetence in bad workmanship or untimely attendance of work by the workmen of the contractor or/ and non-availability of tools/ tackles and consumables, the Liquidated damages @ ½ % (half percent) of the monthly rate will be deducted per day from the bill of the contractor, subject to a maximum of 10% (ten percent) of the monthly contract value. The discretion of the Controlling Officer is final and binding in respect of such deduction.

36. P.F. ACCOUNT

The contractor shall comply with all the provisions of Employees' Provident fund and similar other statutory provisions either in force or that shall be effective here after during execution of the contract.

The agency shall intimate the Company its P.F. A/C No. before it receives payment from the department in terms of the contract.

37. CANCELLATION/ TERMINATING OF THE ORDER

In case the contractor discontinues the work within the contract period, the Company reserves the right to get the work done by any other contractor and realise any damages and losses to the company from contractor's bills. The order may be cancelled/ terminated at any point of time during the contractual period by the company without assigning any reasons whatsoever by serving 7 days' notice for unsatisfactory performance as may be observed by the Controlling Officer.

38. PAYING AUTHORITY:

The Asstt. Manager (F&A), MMHD, Kurseong shall be the paying authority.

39. CONTROLLING OFFICER: The Superintending Engineer (Elect.), MMHD, Kurseong shall be the Controlling Officer.

40. SUPERVISING OFFICER: The Assistant Engineer (Elect), MMHD, Kurseong shall be the Supervising Officer.

41. NODAL OFFICER: The Assistant Manager (HR&A), MMHD, Kurseong shall be the Nodal Officer.

SECTION- V

TECHNICAL SPECIFICATION

(1.) **TECHNICAL SPECIFICATION OF THE 1X1200 kW *FAZI HYDEL POWER STATION, KURSEONG.***

1. **HYDRAULIC TURBINE (Pelton wheel, horizontal shaft)**

Make : L&T under license from VOITH.

Size : 800mm Output : 1285KW

Head : 311.5 M Flow : 0.473 cu.m/Sec.

Speed : 1000 RPM Gross Head/Design Head : 320.12m

Runaway Speed : 1855 RPM

2. **SYNCHRONOUS GENERATOR**

Make : AVK, German

KVA : 1412 Speed : 1000 RPM

Power Factor : 0.85 Volts : 3300

Phase : 3 Frequency : 50 C/s

Excitation : 80V, 5A Aux. Excitation : 90V, 267Hz

Connection : Star

3. **RUNNER**

The runner shall meet the requirements of developing 1200KW at rated net head of 304.00M.

4. **STATIC EXCITATION UNIT**

Self-Regulating type brushless alternator

No. Of Poles : 4 Excitation : 80V, 5A

Aux. Excitation : 90V, 267Hz

5. **VOLTAGE REGULATION**

The voltage regulator contained within the excitation system shall be anti-hunting and shall maintain the generator terminal voltage at pre-set value and at the same time sharing the reactive KVA of the load between the two similar units. It shall be sensitive to the change of ± 5% of normal voltage (average of 3 phases) of the generator when operating under steady load conditions for nay load or excitation within operating range and shall initiate corrective action without hunting.

After the initial maximum voltage following any load rejection up to 110% of rated load, the AVR shall restore the terminal voltages to a value not more than 5% above or below the voltages being held before load rejection and shall maintain the voltages being held before load reaction within these limits throughout the period of generator over speed.

The range of voltage control shall extend from 90% to 110% of rated voltage of generator.

6. **BEARINGS**

Hydrodynamic journal bearings (set of 2 nos.) shall be of pad type design, oil lubricated of self lubrication type. Bearing shall be adequately insulated to prevent any harmful circulating current. They shall be designed to withstand operation at maximum runaway condition for period of 15 minutes.

Deep grooved ball bearing (1 No.) and Single Cylindrical Roller bearing (1 No.) is housed inside the generator casing.

7. **STATION BATTERY**

The Battery bank of Exide make (2 V x 15 Nos.) 30V, 100AH nominal floating voltage and 100 ampere-hour capacity shall be of lead acid type conforming to latest issue of IS : 1652. It shall be connected in parallel with the charging equipment under floating condition and meet the D.C. load requirement of the Power House and Switchyard equipment in the case of failure of station A.C. or charger with the condition that the voltage shall not fall below 85% of the nominal voltage. The voltage across load shall not exceed 110% of rated voltage under charging conditions of the battery.

8. **D.C.D.B CUM BATTERY CHARGING EQUIPMENT**

M/s Caldyne Automatics Ltd, Kolkata make battery charging equipment of float-cum-boost type is required to provide continuous D.C. station load of 16A and to keep the 100AH battery in charged/float condition during normal operation. For quick charging the charger shall be capable of providing the higher voltage than the floating (as the battery approaches full charge) in addition to meeting up the D.C. Station load of 15A. It shall be suitable for initial charging of the battery. The charger shall have constant voltage characteristics throughout its ampere rating, the floating value of the voltage corresponding to the battery. The charger shall comply in all respects with the latest issue of IS : 3136. The A.C. & D.C. circuit breaker shall comply with latest issues of IS : 2516 & BS : 862 respectively. The charger shall have full wave silicon controlled rectifier and dry type transformer and reactor with suitable equipment for control & regulation of 30V D.C. and suitable for dependent operation under 415 V, 3-Ph / 230 V 1-Ph 50 Hz power supply.

The trickle charger shall be of automatic voltage regulated type in addition to manual voltage regulation by rotary switch or D.C. operated push button. The regulation shall not be more than ± 1% for 10% load to full load with ± 10% variation of the input A.C. voltage. The ripple content at the output shall be less than 3% (without battery).

Provision shall be made for annunciation of alternating current power failure to the charger and automatic shut down of the charger by over current devices.

The charger board shall be totally enclosed cubicle type and shall have at least 10 nos. 15 A Switch-fuse outlets for the purpose of D.C. distribution. Cable entries shall be from bottom with provision of cable support. Clamp type cable lugs shall be provided for

connecting external power circuits. Terminal blocks shall be provided for cables to external alarm circuits.

9. **GOVERNING SYSTEM**

The turbine is provided with fluid (servo prime-40) filled Governor & economizer set to control the speed and flow of water by controlling spear tip of nozzle, deflector, pilot valve mechanism & distribution valve.

10. **3.3 KV SWITCHGEAR**

There are four nos. of M/s ABB Make 3.3 KV VCB (1 No. for the T.G. Set, 1 No. for the 3.3/33kV 2MVA PTR and 1 No. for 3.3/.4 kV Station Auxiliary Transformer) which are operated through 30 VDC system to be supplied from the Station Battery System.

11. **ELECTRICAL PANELS**

The 1200kW TG Set has got one unit control panel and excitation panel located in the Control room in the Power House. All the controls, protection, indicator, ammunition for the T.G. Sets are accommodated in the control panel. The generating units may be controlled from the control panel in the central room during starting, stopping and normal running.

12. **HAND OPERATED CRANE OF CAPACITY 10TON**

There is one hand operated overhead travelling crane installed in the top covering of the full length of the Power House including service bay.

13. **CONTROL & RELAY PANELS**

a.	Generator Panel (3.3kV)	1 No.
b.	3.3/33 KV Transformer Panel(3.3kV Side)	1 No.
c.	3.3/33 KV Transformer Panel(33kV Side)	1 No.
d.	Synchronizing Panel	1 No.
e.	33 KV Feeder Panel	2 Nos.
f.	3.3/0.4V Transformer Panel(3.3kV Side)	1 No.

14. **11 KV SWITCHGEAR**

There is 2 Nos. (1No. Incomer and 1 No. outgoing) 11kV OCB Panels installed at Fazi HPS for controlling of Sonada 11kV Feeder.

15. **AC DISTRIBUTION BOARD** :01 set

16. **SWTICHYARD EQUIPMENT**

a) 2MVA Transformer : 02 Nos. (1no. Operating and 1 No. Spare)

Make	: Andrew Yule & Co. Ltd.		
Sl. No.	: 11711 and 11712		
Capacity	: 2000KVA	Voltage	: 3.3/33kV
Ampere	: 350/35A	Phase	: Three
Cooling	: ONAN	Frequency	: 50Hz
Impedance voltage	: 6.287%	Total weight	: 6275kg
Oil	: 1656Litre	Year of Mfg.	:1988
Vector Group	: Yd1		

b) 63kVA, 3.3/0.433KV Aux. Transformer : 01 No.

Make	: Windpower Hindustan Ltd.		
Sl. No.	: 58081		
Capacity	: 63KVA	Voltage	: 3.3kV/0.433V
Current	: 11/84A	Phase	: Three
Impedance voltage	: 4.6%	Cooling	: ON
Oil Capacity	: 140Litre		

c) 1.5 MVA, 33/11 KV Transformer : 01 No.

d) 33 KV VCB : 36 KV, 800 AMP : 03 Nos.

e) 11 KV VCB : 02Nos.

f) 33 KV Isolator : 10 Nos.

i. 3 Nos. Horizontal type

ii. 7 Nos. Vertical type

g) 33 KV Outdoor C.T : 9Nos./ (3 Sets)

h) 33 KV Outdoor P.T. : 5 Nos

i) 33kV LA : 12 Nos

j) VHF Set with battery charger : 01 set

(2) TECHNICAL SPECIFICATION OF THE 2 X 1 MW *RINCHINGTON HYDEL POWER STATION, NEAR KURSEONG, DARJEELING.*

1. **HYDRAULIC TURBINE (Pelton wheel, horizontal shaft)**

Make	:Jyoti Ltd., Baroda, India		
Size	:54P 1000E	Output	:1000 KW
Head	:275 M	Flow	:494 Lit / Sec.
Speed	:600 RPM		

2. **SYNCHRONOUS GENERATOR**

Make	:Jyoti Ltd., Baroda, India				
KVA	:1200	Power Factor	:0.833	Speed	:600 RPM
Volts	:3300	Phase	:3	Frequency	:50 C/s
Amp	:210	Excitation	:55 V, 206A	Connection	:Star

3. **RUNNER**

The runner shall meet the requirements of developing 1000 KW at rated net head of 275M.

4. **STATIC EXCITATION UNIT**

The excitation system of static type consisting of fully controlled solid state bridge, dry type excitation transformer of suitable capacity, static voltage regulator, field breaker, field flashing unit, field discharge resistor, etc. The excitation supply be taken from the generator output.

5. **VOLTAGE REGULATION**

The voltage regulator contained within the excitation system shall be anti-hunting and shall maintain the generator terminal voltage at pre-set value and at the same time sharing the reactive KVA of the load between the two similar units. It shall be sensitive to the change of ± 5% of normal voltage (average of 3 phases) of the generator when operating under steady load conditions for nay load or excitation within operating range and shall initiate corrective action without hunting.

After the initial maximum voltage following any load rejection up to 110% of rated load, the AVR shall restore the terminal voltages to a value not more than 5% above or below the voltages being held before load rejection and shall maintain the voltages being held before load reaction within these limits throughout the period of generator over speed.

The range of voltage control shall extend from 90% to 110% of rated voltage of generator.

6. **PROTECTION FEATURES**

The protection features of the excitation system shall comprise though may not be limited to the following:

a. Field Current Limiter: To limit prolonged over excitation by taking over AVR with a time delay so as not to impair the transient response of system during voltage dip.

b. Rotor Angle Limiter: To limit any under excitation of the machine due to pole slip of the generator with simultaneous action on AVR for increasing excitation.

c. Over voltage protector: To protect the insulation of the field winding against induced over voltages.

d. Over current delay: To ensure o/c protection of Excitation Transformer by initiating auto to manual change over command as a first step. If o/c still persists, trip occurs.

Apart from this there are differential protection, earth fault protection, reverse power protection and voltage restrained over current protection etc.

7. **SLIP-RINGS**

Rotational movement of the slip ring assembly shall be prevented by key arrangement. The surface of the slip rings shall be provided with helical grooves for the carbon to flow without being accumulated and also to achieve uniform current density on the brush area.

8. **BEARINGS**

Hydrodynamic journal bearings (set of 6 nos.) shall be of pad type design, oil lubricated of self lubrication type. Bearing shall be adequately insulated to prevent any harmful circulating current. They shall be designed to withstand operation at maximum runaway condition for period of 15 minutes.

9. **STATION BATTERY**

The battery of 30 V nominal floating voltage and 100 ampere-hour capacity shall be of lead acid type conforming to latest issue of IS: 1652. It shall be connected in parallel with the charging equipment under floating condition and meet the D.C. load requirement of the Power House and Switchyard equipment in the case of failure of station A.C. or charger with the condition that the voltage shall not fall below 85% of the nominal voltage. The voltage across load shall not exceed 110% of rated voltage under charging conditions of the battery.

10. **BATTERY CHARGING EQUIPMENT**

The charging equipment of float-cum-boost type is required to provide continuous D.C. station load of l15 A and to keep the 100 AH battery in charged/float condition during normal operation. For quick charging the charger shall be capable

of providing the higher voltage than the floating (as the battery approaches full charge) in addition to meeting up the D.C. Station load of 15 A. It shall be suitable for initial charging of the battery. The charger shall have constant voltage characteristics throughout its ampere rating, the floating value of the voltage corresponding to the battery. The charger shall comply in all respects with the latest issue of IS: 3136. The A.C. & D.C. circuit breaker shall comply with latest issues of IS: 2516 & BS: 862 respectively. The charger shall have full wave silicon controlled rectifier and dry type transformer and reactor with suitable equipment for control & regulation of 30 V D.C. and suitable for dependent operation under 415 V, 3-Ph / 230 V 1-Ph 50 Hz power supply.

The trickle charger shall be of automatic voltage regulated type in addition to manual voltage regulation by rotary switch or D.C. operated push button. The regulation shall not be more than ± 1% for 10% load to full load with ± 10% variation of the input A.C. voltage. The ripple content at the output shall be less than 3% (without battery).

Provision shall be made for annunciation of alternating current power failure to the charger and automatic shut down of the charger by over current devices.

The charger board shall be totally enclosed cubicle type and shall have at least 10 nos. 15 A Switch-fuse outlets for the purpose of D.C. distribution. Cable entries shall be from bottom with provision of cable support. Clamp type cable lugs shall be provided for connecting external power circuits. Terminal blocks shall be provided for cables to external alarm circuits.

11. **GOVERNING SYSTEM**

The turbine is provided with fluid (servo prime-57) filled Governor & economizer set to control the speed and flow of water by controlling spear tip of nozzle, deflector, pilot valve mechanism & distribution valve.

12. **COOLING WATER SYSTEM**

The system will serve the purpose of supplying cooling water to:

a) Turbine & Generator bearing.

b) Economizer & other auxiliary system.

The source of cooling water is through by-pass arrangement form the main penstock pipeline after MIV in the Power House.

13. **3.3 KV SWITCHGEAR**

There are four nos. of M/s. Biecco Lawrie Make 3.3 KV OCB (2 Nos. for the 2 TG Sets, 1 No. for the 3.3/33 KV 800 KVA TR and 1 No. for 3.3/.4 KV Station Auxiliary Transformer) which are operated through 30 VDC system to be supplied form the Station Battery System.

14. **ELECTRICAL PANELS**

Each unit has got one unit control panel and AVR panel located in the Control room in the Power House. All the controls, protection, indicator, ammunition for the T.G. Sets are accommodated in the control panel. The generating units may be

controlled from the control panel in the central room during starting, stopping and normal running.

15. **E.O.T. CRANE**

There is an electric overhead traveling crane installed in the top covering of the full length of the Power House including service bay.

16. **CONTROL & RELAY PANELS**

a.	Generator Panel	2 Nos.
b.	3.3/33 KV Transformer Panel	1 No.
c.	33 KV Feeder Panel	1 No.

There is a provision of two more 33KV Feeder panel for Mirik and Fazi.

17. **STATION BATTERY**

Battery of Exide make (2 V x 15 Nos.) 30 V.

18. **D.C.D.B. CUM BATTERY CHARGER**

Make - M/s. Debikakey switchyard equipment

19. **SWTICHYARD EQUIPMENT**

a. 800 KVA Transformer: 04 Nos. (1no. as spare)
1 Ph, 3.3/33 KV, 42/242 A,
800 KVA Bank Transformer

b. Aux. Transformer :

i) 33/.4 KV, 100 KVA Transformer : 01 No.

c. 3.3 KV Oil Circuit Breaker : 04 Nos.

d. 33 KV Isolator : 02 Nos.

e. 33 KV Outdoor C.T : 03 Nos (1 Sets)

f. 33 KV Outdoor P.T. : 04Nos.

g. 33kV LA : 03 Nos

h. 33kV MOCB : 01 set

20. VHF set with battery and charger : 01set

(3) TECHNICAL SPECIFICATION OF THE 3 X 200 KW *SIDRAPONG HYDEL POWER STATION, DARJEELING*

1. PLANT HISTORY:

Location in the District of Darjeeling in West Bengal, Sidrapong Hydroelectric Power Station, commissioned in1897, is the oldest Hydro Station in India and reportedly in Asia too.

2. **LOCATION**:

The Power Station is located at the foot-hill of Arya Tea Estate at Sidrapong about 9 km from Darjeeling Town and about 3200 ft. below the level of Darjeeling Railway Station. The approach is through a hair-pin bend at DALIPHATAK on Hill Cart Road. There exist a jeepableunmetalled road with boulder soiling for a length of about 6km from this point to Arya Tea factory beyond which there is a steep pony track up to SidrapongForebay covering a length about 3 km having no vehicular approach.

3. **SALIENT FEATURES**:

Source of Water	:	BarbatiaKhola, KotwaliJhora, Hospital Jhora with minimum discharge of 4, 1.5 and 3 cusec respectively.
Intake Weir	:	Diversion Weir type
Flume Path	:	2500, 1700 and 3200 ft. respectively each with size 2x2 ft.
Gross Head	:	277 ft. (84.43 m)
Forebay Tank	:	Area 223 x 60 x 15 ft& Capacity 1,65,910 ft. Area 112 x 59 x 12 ft& Capacity 68,432 ft.
Penstock	:	2 nos. – for #1 & #2 : 22 in dia. and 725ft. length for #3 : 18 in dia. and 720 ft. length.

Distance:- The distance between Power House and Forebay is approximately 2.5 KM. approx. The distance between Forebay and Barbati Khola, Kotwali Jhora, Hospital Jhora respectively are approximately 3KM, 3.5KM, 4.5KM respectively.

4. **SYSTEM PARTICULARS:**

Each of the 3 units of 250 KVA generates at 400 Volts and is connected to 11KV Switchgear through a 250KVA 11KV/400V Y-Δ Unit Step-up transformer. 5 nos. outgoing 6.6.KV feeders emerge of which one feeder, e.g. Happy Valley feeder is connected to grid.

Generator neutral is solidly grounded. There is provision for Remote Control, Relay & Metering Panel too.

Auxiliary Power Supply at 415V 3-phase 4 wire grounded neutral is received through 53 KVA 6.6KV / 400V Transformer and 415V AC Distribution Board. Auxiliary DC Supply at 30V 2-wire ungrounded system is available from the 100AH VRLA Station Battery and 30V 18A Battery charger with DC Distribution Circuits.

5. **STATION BATTERY** :

The battery of 30V (15 nos. 2Volt Battery) nominal floating voltage and 100AH capacity shall be of AmraRaja make VRLA battery conforming to latest issue of IS: 1652. It shall be connected in parallel with the charging equipment under floating condition and meet the DC load requirement of the Power House and Switchyard equipment in the case of failure of station AC or charger with the condition that the voltage shall not fall below 85% of the nominal voltage. The voltage across load shall not exceed 110% of rated voltage undercharging conditions of the battery.

6. **BATTERY CHARGING EQUIPMENT**:

The charging equipment of float-cum-boost type is required to provide continuous D.C. station load of 18A and to keep the 100AH. Battery in charged / float condition during normal operation for quick charging the charger shall be capable of providing the higher voltage than the floating (as the battery approaches full charge) in addition to meeting up the dc station load of 15A. It shall be suitable for initial charging of the battery. The charger shall have constant voltage characteristics throughout its ampere rating, the floating value of the voltage corresponding to the battery. The charger shall comply in all respects with the latest issue of IS: 3136. The AC & DC circuit breaker shall comply with latest issue of IS: 2516 & BS: 862 respectively.

Provision shall be made for annunciation of alternating current power failure to the charger and automatic shut down of the charger by over current devices.

The charger board shall be totally enclosed cubicle type and shall have at least 10 nos. 16A switch-fuse outlets for the purpose of dc distribution. Cable entries shall be from bottom with provision of cable support. Clamp type cable lugs shall be provided for connecting external power circuits. Terminal blocks shall be provided for cable to external alarm circuits.

7. **COOLING WATER SYSTEM:**

The system will serve the purpose of supplying cooling water to:

a) Turbine & Generator bearing.

The source of cooling water is through bypass arrangement from the main penstock pipeline after MIV in the Power House.

8. **ELECTRICAL PANELS**:

Each unit has got one unit control panel located in the Control room in the Power House. All the controls, protection, indicator, annunciation for the TG sets are accommodated in

the control panel. The generating units may be controlled from the control panel in the central room during staring, stopping and normal running.

9. **11 KV SWITCHGEAR:**

ABB make 11 KV VCB – 9 nos.

10. **CRANE:**

There are 02 Nos. 3 Ton manually operated overhead cranes.

11. **CONTROL AND RELAY PANELS:**

a.	Over Current Relay Control Panel, ABB make	:	1 no.
b.	Relay Control Panel, ABB make	:	4 nos.
c.	Synchronizing Panel, ABB make	:	1 no.

12. **TRANSFORMER:**

a.	0.4 / 11 KV, 250 KVA Power Transformer	:	3 nos.
b.	Earthing Transformer	:	1 no.
c.	11 / 0.4 KV, Aux. Transformer	:	1 no.

13. **D.C.Distribution Board** : 1 no.

14. **A. C. Distribution Board 415volt** : 1 no.

15. **2.063A Exciter** :02 Nos.

16. **VHF set with 12volt battery charger make:Eltech** :01 set

(4) TECHNICAL SPECIFICATION OF THE 2 X 1 MW *LITTLE RANGIT HYDEL POWER STATION, BIJANBARI.*

1. **HYDRAULIC TURBINE (Pelton wheel, horizontal shaft)**

Make	:Jyoti Ltd., Baroda, India Manufactured in India under the license of Gilbert Gilkes & Gordon Ltd. Kendal, England.		
Size	:54PEO	Output	:1119 KW
Head	:229.75 M	Flow	:588 Lit / Sec.
Speed	:600 RPM	Gross Head/Design Head	:244.45 m.
Style	:OT 329 – 009		

2. **SYNCHRONOUS GENERATOR**

Make	:Jyoti Ltd., Baroda, India		
KVA	:1200	Speed	:600 RPM
Power Factor	:0.8	Volts	:3300
Phase	:3	Frequency	:50 C/s
Excitation	:45 V, 190A	Connection	:Star

3. **RUNNER**

The runner shall meet the requirements of developing 1120 KW at rated net head of 230 M.

4. **STATIC EXCITATION UNIT**

The excitation system of static type consisting of fully controlled solid state bridge, dry type excitation transformer of suitable capacity, static voltage regulator, field breaker, field flashing unit, field discharge resistor, etc. The excitation supply be taken from the generator output.

5. **VOLTAGE REGULATION**

The voltage regulator contained within the excitation system shall be anti-hunting and shall maintain the generator terminal voltage at pre-set value and at the same time sharing the reactive KVA of the load between the two similar units. It shall be sensitive to the change of ± 5% of normal voltage (average of 3 phases) of the generator when operating under steady load conditions for any load or excitation within operating range and shall initiate corrective action without hunting.

After the initial maximum voltage following any load rejection up to 110% of rated load, the AVR shall restore the terminal voltages to a value not more than 5% above or below

the voltages being held before load rejection and shall maintain the voltages being held before load reaction within these limits throughout the period of generator over speed.

The range of voltage control shall extend from 90% to 110% of rated voltage of generator.

6. **PROTECTION FEATURES**

The protection features of the excitation system shall comprise though may not be limited to the following:

a. Field Current Limiter : To limit prolonged over excitation by taking over AVR with a time delay so as not to impair the transient response of system during voltage dip.

b. Rotor Angle Limiter :To limit any under excitation of the machine due to pole slip of the generator with simultaneous action on AVR for increasing excitation.

c. Over voltage protector :To protect the insulation of the field winding against induced over voltages.

d. Over current delay :To ensure o/c protection of Excitation Transformer by initiating auto to manual changeover command as a first step. If o/c still persists, trip occurs.

Apart from this there are differential protection, earth fault protection, reverse power protection and voltage restrained over current protection etc.

7. **SLIP-RINGS**

Rotational movement of the slip ring assembly shall be prevented by key arrangement. The surface of the slip rings shall be provided with helical grooves for the carbon to flow without being accumulated and also to achieve uniform current density on the brush area.

8. **BEARINGS**

Hydrodynamic journal bearings (set of 6 nos.) shall be of pad type design, oil lubricated of self lubrication type. Bearing shall be adequately insulated to prevent any harmful circulating current. They shall be designed to withstand operation at maximum runaway condition for period of 15 minutes.

9. **STATION BATTERY**

The battery of 30 V nominal floating voltage and 100 ampere-hour capacity shall be of lead acid type conforming to latest issue of IS: 1652. It shall be connected in parallel with the charging equipment under floating condition and meet the D.C. load requirement of the Power House and Switchyard equipment in the case of failure of station A.C. or charger with the condition that the voltage shall not fall below 85% of the nominal voltage. The

voltage across load shall not exceed 110% of rated voltage under charging conditions of the battery.

10. **BATTERY CHARGING EQUIPMENT**

The charging equipment of float-cum-boost type is required to provide continuous D.C. station load of 15A and to keep the 100AH battery in charged/float condition during normal operation. For quick charging the charger shall be capable of providing the higher voltage than the floating (as the battery approaches full charge) in addition to meeting up the D.C. Station load of 15A. It shall be suitable for initial charging of the battery. The charger shall have constant voltage characteristics throughout its ampere rating, the floating value of the voltage corresponding to the battery. The charger shall comply in all respects with the latest issue of IS : 3136. The A.C. & D.C. circuit breaker shall comply with latest issues of IS : 2516 & BS : 862 respectively. The charger shall have full wave silicon controlled rectifier and dry type transformer and reactor with suitable equipment for control & regulation of 30V D.C. and suitable for dependent operation under 415 V, 3-Ph / 230 V 1-Ph 50 Hz power supply.

The trickle charger shall be of automatic voltage regulated type in addition to manual voltage regulation by rotary switch or D.C. operated push button. The regulation shall not be more than ± 1% for 10% load to full load with ± 10% variation of the input A.C. voltage. The ripple content at the output shall be less than 3% (without battery).

Provision shall be made for annunciation of alternating current power failure to the charger and automatic shut down of the charger by over current devices.

The charger board shall be totally enclosed cubicle type and shall have at least 10 nos. 15A Switch-fuse outlets for the purpose of D.C. distribution. Cable entries shall be from bottom with provision of cable support. Clamp type cable lugs shall be provided for connecting external power circuits. Terminal blocks shall be provided for cables to external alarm circuits.

11. **GOVERNING SYSTEM**

The turbine is provided with fluid (servo prime-57) filled Governor & economizer set to control the speed and flow of water by controlling spear tip of nozzle, deflector, pilot valve mechanism & distribution valve.

12. **COOLING WATER SYSTEM**

The system will serve the purpose of supplying cooling water to:

a) Turbine & Generator bearing.

b) Economizer & other auxiliary system.

The source of cooling water is through by-pass arrangement form the main penstock pipeline after MIV in the Power House.

13. **3.3 KV SWITCHGEAR**

14. There are four nos. of M/s. Biecco Lawrie Make 3.3 KV VCB (2 Nos. for the 2 T.G. Sets, 1 No. for the 3.3/33 KV 800 KVA TR and 1 No. for 3.3/.4 KV Station Auxiliary Transformer)

which are operated through 30 VDC system to be supplied form the Station Battery System.

14. **ELECTRICAL PANELS**

Each unit has got one unit control panel and AVR panel located in the Control room in the Power House. All th controls, protection, indicator, ammunition for the T.G. Sets are accommodated in the control panel. The generating units may be controlled from the control panel in the central room during starting, stopping and normal running.

15. **E.O.T. CRANE 11.5Ton**

There is an electric overhead traveling crane installed in the top covering of the full length of the Power House including service bay.

16. **CONTROL & RELAY PANELS**

a.	Generator Panel	2 Nos.
b.	3.3/33 KV Transformer Panel	1 No.
c.	Synchronizing Panel	1 No.
d.	33 KV Feeder Panel	3 Nos.
e.	Transformer Incomer Panel	1 No.

17. **11 KV SWITCHGEAR**

There are 5 Nos. Of outgoing 11KV feeders controlled from LRHP generating stations namely

(1) Rammam- 11 KV
(2) Ghoom – 11 KV
(3) Bijanbari – 11 KV
(4) Reling – 11 KV
(5) Goke – 11 KV

There are 8 Nos. of 11 KV switchgear panels installed in the Power House.

18. **STATION BATTERY**

Battery of Exide make (2 V x 15 Nos.) 30V, 100AH.

19. **D.C.D.B. CUM BATTERY CHARGER**

Make - M/s. Dhawami International Pvt. Ltd., Baroda

20. **AC DISTRIBUTION BOARD** : 01 set

21. **SWTICHYARD EQUIPMENT**

a. 800 KVA Bank Transformer:1 Ph, 3.3/33 KV, 42/242 A,

b. Aux. Transformer :

i. 33/.4 KV, 100 KVA Transformer : 01 No.

ii. 3.3/.4 KV, 500 KVA Transformer : 01 No.

c. 33/11 KV Transformer :

i. 3 MVA Transformer : 01 No.

ii. 3.15 MVA Transformer : 01 Nos.

iii. 6.3 MVA Transformer : 01 Nos.

d. 33 KV VCB : 36 KV, 800 AMP : 05 Nos.

11 KV VCB : 08Nos.

e. 33 KV Isolator: : 13 Nos.

4 Nos. Horizontal type

8 Nos. Vertical type

1 No. at Auxiliary Transformer Bay

f. 33 KV Outdoor C.T : 12Mps/ (4 Sets)

(Make ESDEE Electrical)

136H, Industrial Estate, Baroda.

g. 33 KV Outdoor P.T. : 07Nos

4 Nos. (Make : Electrical Control & System, Baroda)

3 Nos. (Make - Mack Pin Pvt. Ltd.),

Greater Noida

h. 33kV LA : 09 Nos

i. VHF Set with battery charger : 01 Set

(5)TECHNICAL SPECIFICATION OF THE 3 X 1 MW *MUNGPOO KALI-KHOLA HYDEL POWER STATION*

1. TURBO GENERATOR:

MAKE: JYOTI LTD.

WATER TURBINE		SYNCHRONOUS GENERATOR		
Type	PELTON	Type : SALIENT POLE, BRUSHLESS		
Out put	HORIZONTAL	Output	:	1000 KW
Net Head	:1100 KW	Voltage	:	3300V
Discharge	:696M	Current	:	206 Amp
Speed	:0.180 Cu M /	Ex-Voltage	:	35 Volts
Runway Speed	Sec.	Ex. Current	:	4.2 Amp
	:1500 RPM	Ambient Temp	:	45 Deg. C
	:2400 RPM	Insulator class	:	F
		Winding/connection	:	Star
		No. of Phases	:	3
		Frequency	:	50 C/S
		P.F	:	0.85
		No. of poles:	:	4

2. GENERATOR:

Generator is of the horizontal shaft. AC Synchronous type with stator, Rotor and other accessories accommodated as one unit. The generator is equipped with suitable combined bearing. The generator is provided with suitable cooling arrangement. The generator is equipped with the complete static excitation system. The same is located in the panel switch Board, located in the auxiliary bay, adjacent to machine hall floor.

3. GOVERNING SYSTEM:

The Turbines are provided with governing system consisting of Electrical / Electronic Unit, Governor, oil pumping unit, oil pressure vessel, valves etc. The governor electrical unit, and unit control Panel are located adjacent to each other. Oil pressure system for governor consists of 2(two) nos. oil pressure pumps with driving motors oil piping, valves level, switches , oil filter and vast and filters etc.

4. COOLING WATER SYSTEM :

This system will serve the purpose of supplying cooling water to:

a) Oil cooler of Turbine and Generator guide bearing

b) Other auxiliary system

The source of cooling water is through tail race pumping. One for each unit and one common pump of 2 HP are in system having duplex strainer of capacity 100 LMP.

5. 3.3 KV SWITCHGEAR:

Power House has 7(seven) Jyoti make 3.3. KV Vacuum Switch gear (3 nos. for the units, 2 nos. for the 2.5 MVA, 3.3/33 KV Transformers, 2 nos. for 100 KVA, station Auxiliary Transformers) having closing / opening device and operating motor suitable for working of 110 Volt DC to be supplied from station Battery.

6. ELECTRICAL PANELS :

Each unit has one Jyoti make Unit control Panel, AVR panel located in the auxiliary Bay adjacent to floor.

The neutral grounding cubicle containing the NGR, disconnecting switch, cable terminals from the generator etc.(one for each unit).

7. CONTROL AND PROTECTION PANELS / DESKS :

All the controls, protection, indicators annunciation etc. for the generators are accommodated in the Unit Control Desks (UCD) and other similar instruments, relays, indications, alarms etc. have been accommodated in the Duplex Board.

The generating units may be controlled from the control Desk in the Control room during starting, stopping and normal running. Same controls, instruments, annunciations etc. has also been party duplicated or additionally provided on the Governor control unit.

8. E.O.T CRANE:

There is an Electric Over Head Travelling Crane installed in the Machine Hall top covering full length of the Power House including service Bay.

Make: M/s. MEGA DRIVES PVT. Limited.

Main Hoist: 11.5 tons.

Auxiliary Hoist: 3 Tons.

9. CONTROL AND RELAY PANELS:

a) M/s. JSL Industries Ltd.'s 3.3 KV panels are for the following :

i) Generator Panels : 3 nos.

ii) 100 KVA, 3.3/.415 KV Transformer Panels : 2 nos.

iii) B/C Breaker panels : 1 no.

b) 33 KV Simplex Panels are for the following

i) 33 KV Feeder Panels : 2 nos.

ii) 2.5 MVA, 3.3/33 KV Transformer Panels : 2 nos.

Different indication, Recording and integrating matters, Annunciation System, Bus diagram with indicating lamps, protective relays suitable for generators, transformer, feeders etc. are housed in the front side of the panel.

SYNCHRONIZING PANEL IS THERE IN THE CONTROL ROOM AND USED DURING SYNCHRONIZATION OF GENERATOR FEEDERS WITH GRID SYSTEM AS AND WHEN REQUIRED.

10. a) 415 Volt Switch gear

Air Circuit Breaker, 415 Volts

M/s. JSL Industries Ltd.

b) A.C. Distribution Board.
Moulded case circuit Breakers
M/s. JSL Industries Ltd.

11. STATION BATTERY

a) Battery: Station Battery is of EXIDE make type - 110Volts. (MAKE – Dhawami International Pvt. Ltd., Baroda)
b) D.C. Distribution Board.
Make: M/s. JSL Industries Ltd. – 110 V

12. BRIEF TECHNICAL PARTICULARS FOR 3.3/33 KV SWITCHYARD EQUIPMENT

A. 2.5 MVA TRANSFORMERS

2 (two) nos. of 3 Phase 3.3 KV / 33 KV Transformers complete with all accessories
Make: M/s. ATLANTA ELECTRONICS LTD.
L.V. Rating – 437.4 Amp. With 'OFF-LOAD' top changer
Independence Voltage: 6.5% Vector connection Symbol – YND 1

B. 125 KVA TRANSFORMERS : 02 Nos

C. 33 KV GAS CIRCUIT BREAKERS

4 set of SF 6 Circuit Breakers with mounting structures and driving mechanism, Make : M/s. ABB Ltd.,3 phase, 50 C/S 36 KV, 1600 Amps, Normal rated Breakers filled SF6 Gas of rated pressure of 7.0 bar.
Rated short circuit breaking current – 31.5 KA, 3 Sec., Impulse withstand Voltage – 170 KV

D. LIGHTENING ARRESTORS:

12 nos.(4 sets) Zinc Oxide Surge Arrestors.
Arrestors, rated Voltage: 30 KV
Normal Discharge current: 10 KA
Rated relief current: 40 KA
System Voltage: 36 KV
Make: M/s. Oblum Electrical Ind. Pvt. Ltd.

E. 33 KV ISOLATORS

3 Phase, double break center rotating type horizontally oriented isolators with mounting structure and driving mechanism, Impulse withstand Voltage – 170 KV

F. a) 33 KV OUTDOOR CT:

12 NOS.(4 SETS) 3 PHASE, 33 KV CLASS 50 C/S Current Transformers
200/100/1-1 Amp. VA rating – 30 VA/15 VA
Insulation Level – 170 KV

b) 33 KV outdoor PT:

6(six) nos.(2 sets) PTs having
Voltage ratio: 33000.V3 /110/V3, 2 nos. secondary windings.

Having 100 VA Phase Highest system voltage 36 KV

13. TECHNICAL PARTICULARS OF DIESEL GENERATING SETS :

Capacity: 25 KW Make of Engineer : Kirloskar Electric Co. Ltd.

14. OIL CENTRIFUGE - Alfa Lavel make

15. ELECTRO STATIC LIQUID CLEANER , Ferrocare make

16. V.H.F. SET: 01 set

SECTION- VI

INSPECTION AND MAINTENANCE SCHEDULE

1. Fazi Hydel Power Station

BRIEF DETAILS OF INSPECTION & MAINTENANCE SCHEDULES

REGULAR MAINTENANCE WORK

1. **OPERATION & MAINTENANCE OF CRANES:**

Operation & maintenance of crane (overhead) in the Power House is to be carried out by the contractor.

2. **MAINTENANCE OF ILLUMINATION SYSTEM:**

Regular maintenance and fittings of illumination system of the power house, switchyard and Battery maintenance are to be carried out by the contractor.

3. **REGULAR MAINTENANCE OF TURBINE & GENERATOR SETS AND ASSOCIATED PANELS IN THE CONTROL ROOM:**

i) Regular checking of the running generator outwardly, its vibration, winding temperature, bearing temperature, speed as and when necessary. Abnormality, if any, must be brought to the notice of the controlling officer.

ii) Opening of Generator casing (once in a year) for thorough cleaning without dismantling of rotor, tightening of nuts and bolts, checking of stator holding insulator.

iii) To attend any sort of emergency breakdown maintenance which may require opening of generator casing in addition to routine jobs.

iv) To attend any unscheduled programme of generator at any time.

v) To attend any problem of the excitation system, its control panels and rectification of the same.

vi) To attend any trouble of governor, economiser and associated gear pump, distribution valve, pilot valve, servo motor, deflector and nozzle mechanism operating system.

vii) Regular maintenance of 415 Volt breakers, AC/DC distribution board, station batteries and battery charges.

viii) Dismantling and re-erection of CTs/ PTs/CVTs at 33 KV Switchyard, if required.

MAINTENANCE SCHEDULE FOR TURBO- GENERATOR SET

DAILY CHECKS/ MAINTENANCE:

A. OIL SYSTEM :

1. To check the pressure range of oil.

2. To check the level of oil – top up of oil, if required.

3. To check any overheating of oil – record the oil temperature time to time.

B. RUNNER:

1. To check physically noise and vibration of runner and record it.

C. MAIN INLET VALVE AND BY PASS VALVE:

1. To check water leakage from seals.

2. To check lubrication of oil points.

3. To check operation of bypass valve.

D. DEFLECTOR SERVO, NOZZLE SERVO AND ALL OTHER HYDRAULIC OPERATED VALVES:

1. Oil leakage to be checked and the same to be attended, if there is leakage. Any rectification work including replacement work of pipe, changing of coupling, 'O' ring changing, if required, the same shall have to be carried out.

WEEKLY CHECKS/ MAINTENANCE:

A. PRESSURE GAUGE:

1. To check correct working of the gauge. Record the defective pressure gauge, replacement of new pressure gauge, if required.

B. INLET & BYPASS VALVE:

1. Inlet valve and By- pass valve are to be checked.

2. To check the working of inlet valve, by pass valve and water leakage, if any, is to be taken care of as per requirement.

C. OIL PRESSURE:

1. Check the oil pressure. In case of increase of air bubbles in oil line the same shall be driven out thoroughly and immediately for safe operation of governing unit.

D. GREASING SYSTEM:

1. To check the lubrication of all the grease points and greasing pipe lines. Any leakage through pipe, its coupling is to be attended.

MONTHLY CHECKS/ MAINTENANCE:

A. HAND VALVES:

1. To check all the valves for opening and closing. Any repairing work/ replacement of valve, if required are to be done.

B. DEFLECTOR SERVOMOTOR AND NOZZLE SERVOMOTOR:

1. To check the valves and pipe fittings for leakage. Any repairing works is to be done as per requirement .Any adjustment in opening and closing of deflector servomotor and nozzle servomotor is to be checked and its timing shall be adjusted properly, if required.

C. OIL SYSTEM:

1. Check the leakage. Any repairing work including replacement of 'O' Ring, if required is to be done.

2. Check the oil level & top-up, if required.

D. UNGREASED MOVING JOINTS:

1. Check and lubricate all ungreased moving joints properly. Care is to be taken so that greasing is done along the surfaces.

E. CONTROL AND ANNUNCIATORS IN RESPECT OF UNIT CONTROL BOARD AND OTHER PANELS:

1. To check all the control Indication lamps, fuses- replacement of lamp, fuses, if required, is to be done.

2. Contacts of control switches and push-buttons for proper operation are to be checked, clean them, if required.

3. To inspect the annunciators– cleaning of operating coils and adjustment, if necessary, are to be done.

4. To check the bottom of annunciators panel- replace the fuses/bulb, if required.

5. To check the operation of annunciators.

F. TURBINE PROTECTION:

1. To check for cleanliness of panels and wiring, terminal block etc. Dust out with a feather duster, polish the panel cabinet, if required.

2. Master shut down to be checked.

3. To check the signals and alarms- any repairing/replacement work to be carried out.

4. To check the heaters and light inside panel. Any placement work to be done.

QUARTERLY CHECK/MAINTENANCE:

(a) **Runner:** To check for cavitation, erosion, pitting and other damage-record it.

(b) **Linkage mechanism/cam mechanism:** To examine the linkage mechanism and all connecting Rods for back lash, greasing of bearing. Any machining work including fabrication of shear pin is to be done, if required. During any work on linkage/ cam mechanism, nozzle servo- their adjustment, if required, is to be done.

(c) **Main inlet valve:** To check the opening and closing. Any repairing/replacement, if required, are to be done.

(d) **Turbine housing lower part:** To check for looseness and cracks in weld, rectify the defect, if any.

(e) **Housing top cover:** To check the turbine cover for corrosion and cracks and welds-rectify it if required. Cleaning and painting, if required are to be done.

(f) **Couplings:** To check bolts and nuts sets screws and dowels etc. for tightness. Any tightness, if required, is to be done.

(g) **Foundation:**

(1) To check physically foundation, vibration.

(2)To check concrete foundation for erosion and cracks, in case of anything abnormal, inform the controlling officer to investigate the cause and rectify the defects through Civil Wing.

(h) **Cooling water system:** To check the piping and valves for any leakage. Any repair/replacement of leakage valve/ any repairing work on pipelines are to be done.

(i) **Pressure gauges:** To inspect all water pipings and the respective valves connected to gauges. Any replacement /calibration of the Gauge, if possible at site, is to be carried out.

HALF-YEARLY CHECKS/MAINTENANCE:

(a) **Nozzle distribution valve:** Servicing of valve to done. Cup seals to be checked-replacement, if required, are to be done.

(b) **Turbine housing:** To clean turbine pit, remove gravel and sand etc.

(c) **Shaft seal:** Any leakage from shaft seal is to be attended.

ANNUAL CHECKS/MAINTENANCE:

(a) **Water Ways:** To dewater the penstock and examine the waterways for damage.

(b) **Foundation:**

(i) To check physically the vibration

(ii) To concrete foundation erosion and cracks-records it.

(c) **Turbine housing:** To check for looseness and cracks in weld, record it and rectify the defect requirement.

(d) **Coupling:** (i) To check bolts and nuts set screws and dowels etc. for tightness

(ii) To check for fatigue and wear.

(iii) To check alignment with a dial indicator & record it.

(e) **Runner:** (i) To check for cavitations, erosion and pitting. Record the defects.

(ii) To check locking of nuts.

(f) **Main inlet valve:** Complete overhauling of MIV including inspection of Seal & Gasket. Any repairing, if required to be done.

(g) **Inlet and outlet pipes:** To check internal surface for-

(i) Cavitations, corrosion and pitting.

(ii) To check the drain valve and its piping.

(iii)To check studs and nuts and leakage of dismantling joints.

PERIODIC CHECKS/MAINTENANCE OF PENSTOCK:

(a) To check and inspect the penstock lines once in a month to prevent leakage of water from expansion joints, gland-packing etc.

NOTES:-

(1) All sorts of maintenance works as already described for daily/quarter/half-yearly/annually are Mandatory. However, if required, the frequency of works need be done more than schedule without any extra charge.

(2) For any reason as and when required dewatering the penstock water to be done through penstock drainpipe or through manhole opening.

(3) Before dismantling any part of the machine, match mark the parts, if they are not already marked properly.

(4) When reassembling all or any parts of the machine, use graphite, grease or any other antiseize compound on all the thread and sliding surfaces to prevent scratching.

(5) For any sort of maintenance work, normal/major spares needed and available with the department will be supplied. Spares not available may be prepared by the contractor without any extra charge from the raw materials supplied by the department.

(6) The maintenance works as mentioned above are to be recorded in a register equipments-wise. The detailed name plate of the equipment shall be noted down at the initial stage.

SCOPE OF NORMAL MAINTENANCE WORK IN RESPECT OF 33 KV SWITCH YARD:

(1) DAILY CHECKS/MAINTENANCE:

(A) TRANSFORMERS:

(i) To check oil level of transformer and Silica gel in the breather.

(ii) Oil & winding temperature are to be checked and recorded daily.

(iii) Checking the oil leakage from main tank, radiator, conservator and pressure relief device.

(B) CIRCUIT BREAKERS:

(i) To check on-off indication for correct position.

(ii) To check the indication lamps**.**

(2) WEEKLY CHECKS/MAINTENANCE:

(A) CIRCUIT BREAKERS:

(i) To check water ingress inside housing.

(ii) To check damage and crack of bushing, looseness of nuts and bolts.

(B) TRANSFORMERS:

(i) Condition of Silica gel provided with each Transformer is to be checked and to be changed if the colour of the silica gel becomes pink due to moisture absorption.

(C) CIRCUIT BREAKERS:

(i) To check looseness of nuts and bolts.

(ii) Checking and verifying the mechanism for spring charging.

(D) CONTROL EQUIPMENT AND WIRING:

(i) To check loose connection of electrical wiring.

(ii) To check insulation of wire for cuts, burns etc.

(iii) Checking the free movement of contactor, switches etc. monthly.

(E) 33 KV ISOLATOR:

(i) Checking the insulation of wire for cuts, burns and tightening the loose wires, if any.

(ii) Checking and adjusting free movement of contactor, switches etc.

(3) HALF-YEARLY CHECKS/MAINTENANCE:

(A) GENERAL:

(i) Checking the lubrication of operating mechanism.

(ii) Checking and adjusting the looseness of nuts and bolts.

(iii) To check free movement of trip and closing mechanism.

(B) CTs AND PTS:

(i) Cleaning and tightening of contacts.

(ii) Oil filling, if required.

(C) TRANSFORMERS:

(i) Checking and testing of Transformer oil

(ii) Oil filling, if required.

(D) EARTHING:

(i) Checking of earth resistance with proper instrument.

(4) YEARLY CHECKS/MAINTENANCE:

(A) TRANSFORMERS:

(i) Checking the condition of transformer oil and testing of the same, if necessary,

(ii) Oil filling, if required.

(iii) Cleaning the dust deposited on bushing.

(iv) Checking the cracks on bushing.

(v) Cleaning the rust on any metal part.

(vi) Checking the 3.3 KV Cable terminals.

(vii) To check sulphation, discolouration, looseness of control cables in marshalling box.

(viii) Checking level of transformer bushing.

(ix) Testing the insulation resistance of winding.

(x) To test various alarms, trip setting of transformers.

(xi) Checking the condition of silica gel and change it if required.

(B) CIRCUIT BREAKERS:

(i) To check the rusting of breaker housing.

(ii) To test various alarm/trip setting.

(iii) To check the insulation resistance.

(iv) To check the condition of springs etc.

(C) 33 KV ISOLATORS:

(i) Maintenance of different contacts and greasing is to be done yearly.

(D) CTs AND PTs:

(i) Testing the insulation resistance of all CTs and PTs

(ii) Oil-filling, if required.

17. **HYDRAULIC TURBINE (Pelton wheel, horizontal shaft)**

Make	: L&T under license from VOITH.		
Size	: 800mm	Output	: 1285KW
Head	: 311.5 M	Flow	: 0.473 cu.m/Sec.
Speed	: 1000 RPM	Gross Head/Design Head	: 320.12m
Runaway Speed	: 1855 RPM		

18. **SYNCHRONOUS GENERATOR**

Make	: AVK, German		
KVA	: 1412	Speed	: 1000 RPM
Power Factor	: 0.85	Volts	: 3300
Phase	: 3	Frequency	: 50 C/s
Excitation	: 80V, 5A	Aux. Excitation	: 90V, 267Hz
Connection	: Star		

19. **RUNNER**

The runner shall meet the requirements of developing 1200KW at rated net head of 304.00M.

20. **STATIC EXCITATION UNIT**

Self-Regulating type brushless alternator

No. Of Poles	: 4	Excitation	: 80V, 5A
Aux. Excitation	: 90V, 267Hz		

21. **VOLTAGE REGULATION**

The voltage regulator contained within the excitation system shall be anti-hunting and shall maintain the generator terminal voltage at pre-set value and at the same time sharing the reactive KVA of the load between the two similar units. It shall be sensitive to the change of ± 5% of normal voltage (average of 3 phases) of the generator when operating under steady load conditions for nay load or excitation within operating range and shall initiate corrective action without hunting.

After the initial maximum voltage following any load rejection up to 110% of rated load, the AVR shall restore the terminal voltages to a value not more than 5% above or below the voltages being held before load rejection and shall maintain the voltages being held before load reaction within these limits throughout the period of generator over speed.

The range of voltage control shall extend from 90% to 110% of rated voltage of generator.

22. **BEARINGS**

Hydrodynamic journal bearings (set of 2 nos.) shall be of pad type design, oil lubricated of self lubrication type. Bearing shall be adequately insulated to prevent any harmful circulating current. They shall be designed to withstand operation at maximum runaway condition for period of 15 minutes.

Deep grooved ball bearing (1 No.) and Single Cylindrical Roller bearing (1 No.) is housed inside the generator casing.

23. **STATION BATTERY**

The Battery bank of Exide make (2 V x 15 Nos.) 30V, 100AH nominal floating voltage and 100 ampere-hour capacity shall be of lead acid type conforming to latest issue of IS : 1652. It shall be connected in parallel with the charging equipment under floating condition and meet the D.C. load requirement of the Power House and Switchyard equipment in the case of failure of station A.C. or charger with the condition that the voltage shall not fall below 85% of the nominal voltage. The voltage across load shall not exceed 110% of rated voltage under charging conditions of the battery.

24. **D.C.D.B CUM BATTERY CHARGING EQUIPMENT**

M/s Caldyne Automatics Ltd, Kolkata make battery charging equipment of float-cum-boost type is required to provide continuous D.C. station load of 16A and to keep the 100AH battery in charged/float condition during normal operation. For quick charging the charger shall be capable of providing the higher voltage than the floating (as the battery approaches full charge) in addition to meeting up the D.C. Station load of 15A. It shall be suitable for initial charging of the battery. The charger shall have constant voltage characteristics throughout its ampere rating, the floating value of the voltage corresponding to the battery. The charger shall comply in all respects with the latest issue of IS : 3136. The A.C. & D.C. circuit breaker shall comply with latest issues of IS : 2516 & BS : 862 respectively. The charger shall have full wave silicon controlled rectifier and dry type transformer and reactor with suitable equipment for control & regulation of 30V D.C. and suitable for dependent operation under 415 V, 3-Ph / 230 V 1-Ph 50 Hz power supply.

The trickle charger shall be of automatic voltage regulated type in addition to manual voltage regulation by rotary switch or D.C. operated push button. The regulation shall not be more than ± 1% for 10% load to full load with ± 10% variation of the input A.C. voltage. The ripple content at the output shall be less than 3% (without battery).

Provision shall be made for annunciation of alternating current power failure to the charger and automatic shut down of the charger by over current devices.

The charger board shall be totally enclosed cubicle type and shall have at least 10 nos. 15 A Switch-fuse outlets for the purpose of D.C. distribution. Cable entries shall be from bottom with provision of cable support. Clamp type cable lugs shall be provided for connecting external power circuits. Terminal blocks shall be provided for cables to external alarm circuits.

25. **GOVERNING SYSTEM**

The turbine is provided with fluid (servo prime-40) filled Governor & economizer set to control the speed and flow of water by controlling spear tip of nozzle, deflector, pilot valve mechanism & distribution valve.

26. **3.3 KV SWITCHGEAR**

There are four nos. of M/s ABB Make 3.3 KV VCB (1 No. for the T.G. Set, 1 No. for the 3.3/33kV 2MVA PTR and 1 No. for 3.3/.4 kV Station Auxiliary Transformer) which are operated through 30 VDC system to be supplied from the Station Battery System.

27. **ELECTRICAL PANELS**

The 1200kW TG Set has got one unit control panel and excitation panel located in the Control room in the Power House. All the controls, protection, indicator, ammunition for the T.G. Sets are accommodated in the control panel. The generating units may be controlled from the control panel in the central room during starting, stopping and normal running.

28. **HAND OPERATED CRANE OF CAPACITY 10TON**

There is one hand operated overhead travelling crane installed in the top covering of the full length of the Power House including service bay.

29. **CONTROL & RELAY PANELS**

a.	Generator Panel (3.3kV)	1 Nos.
b.	3.3/33 KV Transformer Panel(3.3kV Side)	1 No.
c.	3.3/33 KV Transformer Panel(33kV Side)	1 No.
d.	Synchronizing Panel	1 No.
e.	33 KV Feeder Panel	2 Nos.
f.	3.3/0.4V Transformer Panel(3.3kV Side)	1 No.

30. **11 KV SWITCHGEAR**

There is 2 Nos. (1No. Incomer and 1 No. outgoing) 11kV OCB Panels installed at Fazi HPS for controlling of Sonada 11kV Feeder.

31. **AC DISTRIBUTION BOARD** :01 set

32. **SWTICHYARD EQUIPMENT**

k) 2MVA Transformer : 02 Nos. (1no. Operating and 1 No. Spare)

Make	: Andrew Yule & Co. Ltd.		
Sl. No.	: 11711 and 11712		
Capacity	: 2000KVA	Voltage	: 3.3/33kV
Ampere	: 350/35A	Phase	: Three
Cooling	: ONAN	Frequency	: 50Hz
Impedance voltage	: 6.287%	Total weight	: 6275kg
Oil	: 1656Litre	Year of Mfg.	:1988
Vector Group	: Yd1		

l) 63kVA, 3.3/0.433KV Aux. Transformer : 01 No.

Make	: Windpower Hindustan Ltd.		
Sl. No.	: 58081		
Capacity	: 63KVA	Voltage	: 3.3kV/0.433V
Current	: 11/84A	Phase	: Three
Impedance voltage	: 4.6%	Cooling	: ON
Oil Capacity	: 140Litre		

m) 1.5 MVA, 33/11 KV Transformer : 01 No.

n) 33 KV VCB : 36 KV, 800 AMP : 03 Nos.

o) 11 KV VCB : 02Nos.

p) 33 KV Isolator : 10 Nos.

iii. 3 Nos. Horizontal type

iv. 7 Nos. Vertical type

q) 33 KV Outdoor C.T : 9Nos./ (3 Sets)

r) 33 KV Outdoor P.T. : 5 Nos

s) 33kV LA : 12 Nos

t) VHF Set with battery charger : 01 set

2. Rinchington Hydel Power Station

BRIEF DETAILS OF INSPECTION & MAINTENANCE SCHEDULES

REGULAR MAINTENANCE WORK

1. **C.W. PIPELINES:**

i) Attending any pipe/valve/gauges of CW pipeline/common header either damaged or chocked immediately and repair/replacement of the same.

ii) Thorough cleaning of water pipelines by flushing at least once half yearly.

2. **OPERATION & MAINTENANCE OF CRANES:**

Operation & maintenance of crane (overhead) in the Power House is to be carried out by the contractor.

3. **MAINTENANCE OF ILLUMINATION SYSTEM:**

Regular maintenance and fittings of illumination system of the power house, switchyard and Battery maintenance are to be carried out by the contractor.

4. **REGULAR MAINTENANCE OF TURBINE & GENERATOR SETS AND ASSOCIATED PANELS IN THE CONTROL ROOM:**

ix) Regular checking of the running generator outwardly, its vibration, winding temperature, bearing temperature, speed, adjustment of spring pressure on slip ring, cleaning of carbon deposition by emery paper and petrol as and when necessary. Abnormality, if any, must be brought to the notice of the controlling officer.

x) Opening of Generator casing (once in a year) for thorough cleaning without dismantling of rotor, tightening of nuts and bolts, checking of stator holding insulator.

xi) To attend any sort of emergency breakdown maintenance which may require opening of generator casing in addition to routine jobs.

xii) To attend any unscheduled programme of generator at any time.

xiii) To attend any problem of the excitation system, its control panels, excitation transformer and rectification of the same.

xiv) To attend any trouble of governor, economiser and associated gear pump, distribution valve, pilot valve, servo motor, deflector and nozzle mechanism operating system.

xv) Regular maintenance of 415 Volt breakers, AC/DC distribution board, station batteries and battery charges.

xvi) Dismantling and re-erection of CTs/ PTs/CVTs at 33 KV Switchyard, if required.

MAINTENANCE SCHEDULE FOR TURBO- GENERATOR SET

DAILY CHECKS/ MAINTENANCE:

B. OIL SYSTEM :

1. To check the pressure range of oil.

2. To check the level of oil – top up of oil, if required.
3. To check any overheating of oil – record the oil temperature time to time.

C. RUNNER:

1. To check physically noise and vibration of runner and record it.

D. MAIN INLET VALVE AND BY PASS VALVE:

1. To check water leakage from seals.
2. To check lubrication of oil points.
3. To check operation of bypass valve.

E. DEFLECTOR SERVO, NOZZLE SERVO AND ALL OTHER HYDRAULIC OPERATED VALVES:

1. Oil leakage to be checked and the same to be attended, if there is leakage. Any rectification work including replacement of pipe, changing of coupling, 'O' ring changing, if required, the same shall have to be carried out.

WEEKLY CHECKS / MAINTENANCE:

B. PRESSURE GAUGE:

1. To check correct working of the gauge. Record the defective pressure gauge, replacement of new pressure gauge, if required

C. INLET & BYPASS VALVE:

1. Inlet valve and By- pass valve are to be checked.
2. To check the working of inlet valve, by pass valve and water leakage, if any, is to be taken care of as per requirement.

C. OIL PRESSURE:

2. Check the oil pressure. In case of increase of air bubbles in oil line the same shall be driven out thoroughly and immediately for safe operation of governing unit.

D. GREASING SYSTEM:

1. To check the lubrication of all the grease points and greasing pipe lines. Any leakage through pipe, its coupling is to be attended.

MONTHLY CHECKS/ MAINTENANCE:

B. HAND VALVES:

1. To check all the valves for opening and closing. Any repairing work/ replacement of valve, if required is to be done.

D. DEFLECTOR SERVOMOTOR AND NOZZLE SERVOMOTOR:

2. To check the valves and pipe fittings for leakage. Any repairing works is to be done as per requirement .Any adjustment in opening and closing of deflector servomotor and nozzle servomotor is to be checked and its timing shall be adjusted properly, if required.

E. OIL SYSTEM:

1. Check the leakage. Any repairing work including replacement of 'O' Ring, if required, is to be done.
2. Check the oil level & top-up, if required.

F. UNGREASED MOVING JOINTS:

2. Check and lubricate all ungreased moving joints properly. Care is to be taken so that greasing is done along the surfaces.

G. CONTROL AND ANNUNCIATORS IN RESPECT OF UNIT CONTROL BOARD AND OTHER PANELS:

1. To check all the control Indication lamps, fuses- replacement of lamp, fuses, if required, is to be done.
2. Contacts of control switches and push-buttons for proper operation are to be checked, clean them, if required.
3. To inspect the annnunciators– cleaning of operating coils and adjustment, if necessary, are to be done.
4. To check the bottom of annnunciators panel- replace the fuses/bulb, if required.
5. To check the operation of annnunciators.

G. TURBINE PROTECTION:

1. To check for cleanliness of panels and wiring, terminal block etc. Dust out with a feather duster, polish the panel cabinet, if required.
2. Master shut down to be checked.
3. To check the signals and alarms- any repairing/replacement work to be carried out.
4. To check the heaters and light inside panel. Any placement work to be done.

QUARTERLY CHECK/MAINTENANCE:

(j) **Runner:** To check for cavitation, erosion, pitting and other damage-record it.

(k) **Cooling water system:** To check the operation of cooling water pipe line, by-pass valve etc.

(l) **Linkage mechanism/cam mechanism:** To examine the linkage mechanism and all connecting Rods for back lash, greasing of bearing. Any machining work including fabrication of shear pin is to be done, if required. During any work on linkage/ cam mechanism, nozzle servo- their adjustment, if required, is to be done.

(m) **Main inlet valve:** To check the opening and closing. Any repairing/replacement, if required, is to be done.

(n) **Turbine housing lower part:** To check for looseness and cracks in weld, rectify the defect, if any.

(o) **Housing top cover:** To check the turbine cover for corrosion and cracks and welds-rectify it if required. Cleaning and painting, if required are to be done.

(p) **Couplings:** To check bolts and nuts sets screws and dowels etc. for tightness. Any tightness, if required, is to be done.

(q) **Foundation:** (1) To check physically foundation, vibration.

(2)To check concrete foundation for erosion and cracks, in case of anything abnormal, inform the controlling officer to investigate the cause and rectify the defects through Civil Wing.

(r) **Cooling water system:** To check the piping and valves for any leakage. Any repair/replacement of leakage valve/ any repairing work on pipelines are to be done.

(s) **Pressure gauges:** To inspect all water pipings and the respective valves connected to gauges. Any replacement /calibration of the Gauge, if possible at site, is to be carried out.

(t) **Oil purifying unit:** Centrifuging of governor oil and bearing oil to be done. Any breakdown maintenance of oil purifying unit to be done. The centrifuging machine will be provided, if available.

HALFYEARLY CHECKS/MAINTENANCE:

(d) **Nozzle distribution valve:** Servicing of valve to done. Cup seals to be checked-replacement, if required, is to be done.

(e) **Turbine housing:** To clean turbine pit, remove gravel and sand etc.

(f) **Shaft seal:** Any leakage from shaft seal is to be attended.

ANNUAL CHECKS/MAINTENANCE:

(c) **Water Ways:** To dewater the penstock and examine the waterways for damage.

(d) **Foundation:** (i) To check physically the vibration

(ii) To concrete foundation erosion and cracks-records it.

(f) **Turbine housing:** To check for looseness and cracks in weld, record it and rectify the defect requirement.

(d) **Coupling:** (i) To check bolts and nuts set screws and dowels etc. for tightness

(ii) To check for fatigue and wear.

(iii) To check alignment with a dial indicator & record it.

(e) **Runner:** (i) To check for cavitations, erosion and pitting. Record the defects.

(ii) To check locking of nuts.

(f) **Main inlet valve:** Complete overhauling of MIV including inspection of Rubber seal. Any repairing, if required to be done.

(g) **Inlet and outlet pipes:** To check internal surface for-

(i) Cavitations, corrosion and pitting.

(ii) To check the drain valve and its piping.

(iii) To check studs and nuts and leakage of dismantling joints.

PERIODIC CHECKS/MAINTENANCE OF PENSTOCK:

(b) To check and inspect the penstock lines once in a month to prevent leakage of water from expansion joints, gland-packing etc. The expansion joints, gland packing shall be tightened within permissible limit and necessary measures shall be adopted to prevent leakage of other locations also.

(c) Replace missing bolts and nuts of expansion joints.

(d) To grease saddle plates periodically.

(e) To repair damaged threads of stud, bolts and nuts as detected during periodic inspection and replace them as required.

(f) To inspect periodically all expansion joints and report leakage, if any.

NOTES:-

(7) All sorts of maintenance works as already described for daily/quarter/half-yearly/annually are Mandatory. However, if required, the frequency of works need be done more than schedule without any extra charge.

(8) For any reason as and when required dewatering the penstock water to be done through penstock drainpipe or through manhole opening.

(9) Before dismantling any part of the machine, match mark the parts, if they are not already marked properly.

(10) When reassembling all or any parts of the machine, use graphite, grease or any other antiseize compound on all the thread and sliding surfaces to prevent scratching.

(11) All loose components should be labelled for each identification during reassembly.

(12) For any sort of maintenance work, normal/major spares needed and available with the department will be supplied. Spares not available may be prepared by the contractor without any extra charge from the raw materials supplied by the department.

(13) The maintenance works as mentioned above are to be recorded in a register equipments-wise. The detailed name plate of the equipment shall be noted down at the initial stage.

SCOPE NORMAL MAINTENANCE WORK IN RESPECT OF 33 KV SWITCH YARD.

(2) DAILY CHECKS/MAINTENANCE:

(C) TRANSFORMERS:

(iv) To check oil level of transformer and Silica gel in the breather.

(v) Oil & winding temperature are to be checked and recorded daily.

(vi) Checking the oil leakage from main tank, radiator, conservator and pressure relief device.

(D) CIRCUIT BREAKERS:

(iii) To check on-off indication for correct position.

(iv) To check the indication lamps**.**

(3) WEEKLY CHECKS/MAINTENANCE:

(B) CIRCUIT BREAKERS:

(a) To check water ingress inside housing.

(b) To check damage and crack of bushing, looseness of nuts and bolts.

(C) TRANSFORMERS:

(i) Condition of Silica gel provided with each Transformer is to be checked and to be changed if the colour of the silica gel becomes pink due to moisture absorption.

(D) CIRCUIT BREAKERS:

(i) To check looseness of nuts and bolts.

(ii) Checking and verifying the mechanism for spring charging.

(E) CONTROL EQUIPMENT AND WIRING:

(i) To check loose connection of electrical wiring.

(ii) To check insulation of wire for cuts, burns etc.

(iii) Checking the free movement of contactor, switches etc. monthly.

(F) 33 KV ISOLATOR:

(i) Checking the insulation of wire for cuts, burns and tightening the loose wires, if any.

(ii) Checking and adjusting free movement of contactor, switches etc.

(5) HALF YEARLY CHECKS/MAINTENANCE:

(B) GENERAL:

(i) Checking the lubrication of operating mechanism.

(ii) Checking and adjusting the looseness of nuts and bolts.

(iii) To check free movement of trip and closing mechanism.

(C) CTs AND PTS:

(i) Cleaning and tightening of contacts.

(ii) Oil filling, if required.

(D) TRANSFORMERS:

(i) Checking and testing of Transformer oil

(ii) Oil filling, if required.

(E) EARTHING:

1. Checking of earth resistance with proper instrument.

(6) YEARLY CHECKS/MAINTENANCE:

(B) TRANSFORMERS:

(i) Checking the condition of transformer oil and testing of the same, if necessary,

(ii) Oil filling, if required.

(iii) Cleaning the dust deposited on bushing.

(iv) Checking the cracks on bushing.

(v) Cleaning the rust on any metal part.

(vi) Checking the 3.3 KV Cable terminals.

(vii) To check sulphation, discolouration, looseness of control cables in marshalling box.

(viii) Checking level of transformer bushing.

(ix) Testing the insulation resistance of winding.

(x) To test various alarms, trip setting of transformers.

(xi) Checking the condition of silica gel and change it if required.

(C) CIRCUIT BREAKERS:

(i) To check the rusting of breaker housing.

(ii) To test various alarm/trip setting.

(iii) To check the insulation resistance.

(iv) To check the condition of springs etc.

(E) 33 KV ISOLATORS:

1. Maintenance of different contacts and greasing is to be done yearly.

(E) CTs AND PTs:

(i) Testing the insulation resistance of all CTs and PTs

(ii) Oil-filling, if required.

SCOPE OF WORK FOR CATERING, MAINTENANCE AND UPKEEPING OF PRE-FABRICATED BUILDING OF RINCHINGTON

1. To look after the pre-fabricated building (3 nos. bedroom, 1 no. kitchen and 1 no. dining room) including furniture, furnishing articles, bed covers, bed sheets, towels, linens, curtains, crockery on day to day basis.
2. Daily sweeping moping, cleaning and dusting of floors, stairs, rooms, corridor, veranda and walk way etc. and various grill, windows, doors, partitions, soft furnishing articles etc. Including the supply of brooms, mop, brush etc.
3. Arrangement of prompt 'Attendant' service for the visitors.
4. Washing, cleaning and ironing of all bed sheets, bed covers and other linens.
5. Daily rubbing and cleaning of toilets, wash basins with disinfectant and W.C. with acid, Phenyl etc.
6. Cleaning the drain including removal all sewage / garbage etc. once in a week.
7. Guarding of the Pre-fabricated building and maintain the safety & security of the premises.
8. Cooking and serving of food for officials who will stay at pre-fabricated building including washing and cleaning of utensils, removal of garbage etc. (Cost of fooding etc will be borne by the visitors as per approved rate and qualities.)
9. To ensure continuous water supply including tit bit repairing of water supply line as and when required
10. Maintenance of the Register and collection of charges from the visitors staying at the pre-fabricated building as per Company's rate to be fixed time to time and deposit the same to cash section of MMHD, Kurseong, WBSEDCL at least once in every week positively.
11. Day to day Catering service to the Visitors as per Menu (of approved qualities).

Terms and Conditions:-

1. The contractor shall have to maintain a stock register of the articles as above at his own arrangement and cost and bear the total cost of any loss or damage of any articles belonging to the WBSEDCL's pre-fabricated building on demand. If necessary Company reserves the right to adjust demurrages from pending Bill/s of the Contractors/Performance Bond.
2. Replacement of electrical installation / fittings such as Emergency Lamp, Geyser, Water Filter, Electrical Wirings, Light fittings, bulb and fluorescent tube etc. of the I.B. shall be maintained at Company's cost on the basis of survey report. The

installations of the pre-fabricated building will remain under agency's custody and they will remain responsible for security of those items. In case of any damage / defect the same to be intimated to the Office for further actions.

3. Cost of cleaning materials like vim, Detergent, Soap, Phenyl, Naphthalene, Odonil etc. will be borne by the Contractor. The contractor shall supply approved quality of liquid hand soap, toilet/ bath soap, Mosquito repellents etc. at his own cost.
4. The catering service as above shall include cooking, serving of tea & coffee breakfast, lunch, Tiffin, snacks, dinner etc. to the visitors daily. The rate to be collected from Visitors is as per schedule rate chart of WBEDCL. The required crockery articles shall be supplied by the Company and to be placed under his control for efficient running of Pre-fabricated building. Any damage/ loss of articles so provided by the company during tenure of this contract shall have to be made good at the cost of the contractor. Before commencement of the work the agency will check-up the existing articles at Pre-fabricated building and make a record in dead stock register.
5. Those visiting I.B. shall be charged as per rate for food and beverages now in existence and revised from time to time.
6. Fresh supply of all kinds of articles, either additionally or in replacement due to normal wear and tear, shall however be made at Company's cost on survey.
7. The successful Contractor shall have to deposit the charges as collected under Sl. No. 01 (j) above to the Asstt. Manager (F&A), MMHD, with detailed statement and I.B. Registers, duly authorized by officer-in-charge of the Bungalow failing which the monthly bill will not be released.
8. The successful tenders should provide standard Liveries to Attendant, Cook, serving personnel at his own cost so as to make them presentable and well dressed.
9. If any poor or ill-performance of the contractor is observed the company will have every right to deduct necessary amount and may withdraw the order.
10. Monthly payment of maintenance and catering service will be made by A/c Payee cheque by the Asstt. Manager (F&A), MMHD, against monthly bill duly certified by the Officer-in-charger of the pre-fabricated building and on deposition of collected charges from the visitors.
11. Initially the rate contract may be placed for 01 (one) Year with the successful renderer and may likely to continue for a further a period of 03(three) months, if necessary subject to considering the performance. In case of poor performance, the Authority has right to cancel the contract without assigning any reason, whatsoever at its discretion after serving a 24 Hrs. Notice.
12. For maintaining the service effectively and satisfactorily initially the following personnel shall have to be deployed by the contractor:-

a. Skilled: - 1 (one) no.

b. Unskilled Personnel - 1 (one) no.

Note:- No under aged personnel be engaged for rendering the maintenance and catering Service at Pre-fabricated building. The violation of the same shall attract penal action as per relevant ACT.

13. The rate should be quoted inclusive of wages, Statutory Payment of all taxes etc. of cook and other personnel who will be engaged for the jobs shall have to be borne by Contractor. Service Tax to be paid extra applicable.
14. The visitors will pay the rent, cost of food, etc. as per Company's rate and collection of the same to be arranged by the Contractor against proper bill.
15. Wages of the workmen shall have to be disbursed as per minimum wages Act (revised from time to time) and necessary wage Register for the purpose shall have to be maintained by the Contractor. Payment of wages to the workmen engaged by the Contractor should be made in presence of the authorized representative as may be specified by the Controlling Officer of the Pre-fabricated building who shall in turn duly authenticate and sign the Payment register
16. The successful contractor shall be liable to make payment of compensation to workmen engaged for this job as per provision of Workmen's Compensation Act, 1923 in the case of any casualties take place while on duty.
17. The contracting agency shall preferably make arrangement for disbursement of wages etc. to its employee through schedule Commercial Bank after due intimation to controlling Officer.
18. The successful tenderer shall have to comply the provisions of Employees Provident Fund and E.S.I. Act. And shall be liable for deduction of Provident Fund/ E.S.I. Contribution of their workmen & deposit the same with the respective Authorities along with require share of Employer's contribution. In case of non-applicability/ availability of E.S.I. the Mediclaim Policy of desired amount required to be procured by the Contractor's.
19. Identity Card of the Contract labour/part-timer:

    The Contractor engaging contract labour/ part-timer must ensure 100% compliance of Issue of Identity Cards to such persons. A copy of Identity Cards of Labourers engaged shall be submitted to this end for record.
20. Payment of bonus to the contract labour:

    The Contractor shall ensure that contract labour engaged in different works are extended with statutory bonus and same should be released in presence of an AM(HR&A) by way of witnessing and certifying the same.
21. Work Permit:

    The contractor must ensure that no contract labour is engaged without a work permit to issued by the Asstt. Manager (HR&A), MMHD to those contract labours to be engaged in the I.B. in the work permit the name of the contract labours engaged shall be provided.
22. The company shall provide free Water Supply, Electricity for running I.B. smoothly. Fuel cost for cooking is to be borne by the contractor.
23. It shall be responsibility of the Contractor to ensure possession of valid GST Registration No.(GSTIN), Trade License, Previous Service Tax Registration No. And

Income Tax clearance certificate, PF deposition challan of the workmen and other documents as per law.

24. The successful contractor shall ensure all catering arrangement in prepared at the I.B. premises within 24 hours notice.
25. The successful contractor shall not indulge in any improper activities OR the workmen engaged at Guest House, which are not directly or indirectly related with contract job.
26. All liability arising out of dispute of workmen or accident or any other incident whatsoever shall rest on the Contractor. The company will not bear any liability in case of occurrence of any such events.
27. In the event of unsatisfactory performance or breach of terms & conditions by the successful contractor the contract will be terminated by serving 7 days' notice.
28. The food stuff must consist of fine quality of rice, flour, fresh quality of livestock, fruit and vegetables. Preparation of food stuff should be made from approved quality of oil and spices. The standard rate chart of food stuff of WBSEDCL shall have to be displayed at suitable place in the building.
29. Before submission of tender the intending tenderers may visit the site on prior intimation. They may obtain further information from DE(E), MMHD, Kurseong, Mobile no. 7449300706.
30. The tenderers shall keep his/ their offer valid for acceptance for at least 30 (Thirty) days from the date of opening of tenders.
31. The Contractor shall inspect as a part of the housekeeping and maintenance work, the water supply points plumbing installations, toilets, electrical light and fan points, tower bolts, locks and keys of the wooden cupboards of the room and battery to the wall clock and in the remote control of the TV set, charges in the guest house etc., and bring to the notice of the caretaker/ company's in-charge/ authorized representative in the event of any major defect/ damages of any major so that the same could be attended immediately.
32. All staff employed by the Contractor should be in proper uniform while on duty. The Contractor should supply the uniform without colour specification and pattern approved by the WBSEDCL. It would be noted by the Contractor that in any case of the workers employed by the Contractor are found to be on duty without the uniform, a penalty will be imposed suitably decided by WBSEDCL.
33. The Contractor should ensure safety of the belongings of the inmates in the Pre-fabricated building however, in case of any untoward incident like theft or loss of any belongings/cash that takes place from the occupant's room due to negligence on the part of the worker employed by the Contractor would be liable for compensating the loss.
34. The company will provide bed linen and bath towels to the Contractor. The Contractor shall be responsible for the safety & security of all the items of furniture's and fixtures, equipment, locks, buckets, mugs etc. The Contractor shall have to hand over all items provided to him, as indicated elsewhere, to the Company at the time of termination of the contract.

3. SIDRAPONG Hydel Power Station

BRIEF DETAILS OF INSPECTION & MAINTENANCE SCHEDULES

REGULAR MAINTENANCE WORK

1) **C.W. PIPELINES:**

II) Attending any pipe/valve/gauges of CW pipeline/common header either damaged or chocked immediately and repair/replacement of the same.

III) Thorough cleaning of water pipelines by flushing at least once half yearly.

2) **OPERATION & MAINTENANCE OF CRANES:**

Operation & maintenance of crane (overhead) in the Power House is to be carried out by the contractor.

3) **MAINTENANCE OF ILLUMINATION SYSTEM:**

Regular maintenance and fittings of illumination system of the power house, switchyard and Battery maintenance are to be carried out by the contractor.

4) **REGULAR MAINTENANCE OF TURBINE &GENERATOR SETS AND ASSOCIATED PANELS IN THE CONTROL ROOM:**

i) Regular checking of the running generator outwardly, its vibration, winding temperature, bearing temperature, speed, adjustment of spring pressure on slip ring, cleaning of carbon deposition by emery paper and petrol as and when necessary. Abnormality, if any, must be brought to the notice of the controlling officer.

ii) Opening of Generator casing (once in a year) for thorough cleaning without dismantling of rotor, tightening of nuts and bolts, checking of stator holding insulator.

iii) To attend any sort of emergency breakdown maintenance which may require opening of generator casing in addition to routine jobs.

iv) To attend any unscheduled programme of generator at any time.

v) To attend any problem of the excitation system, its control panels, excitation transformer and rectification of the same.

vi) To attend any trouble of governor, economiser and associated gear pump, distribution valve, pilot valve, servo motor, deflector and nozzle mechanism operating system.

vii) Regular maintenance of breakers, AC/DC distribution board, station batteries and battery charges.

viii) Dismantling and re-erection of CTs/ PTs/CVTs at 33/6.6KV Switchyard, if required.

5) **MAINTENANCE OF T.G. SETS :**

Daily, Periodical and Annual Inspection & Maintenance as and when required of Turbo-Generator Sets (3 x 200 KW) and auxiliaries along with all other equipments like AC/DC panel, battery and charger, 11 KV Switch gear, 11 KV control panel, etc. unit control panel, and other Electro-mechanical equipments and accessories like Governor, AVR of Sidrapong Hydel Power Station.

6) **MAINTENANCE OF SWITCHYEARD:**

Daily, Periodical and Annual Inspection & Maintenance (as and when required) of 0.4 / 11 KV Switchyard equipments including Transformers and other accessories like 11 KV circuit breakers, Power cable, L.T. cable etc. along with upkeepment of the Switchyard by cutting & removing of grass and weeds for the Substations associated with Sidrapong Hydel Power Station.

7) **MAINTENANCE OF L.T. LINE:**

Routine check-up and Round-the-Clock Maintenance of LT lines both overhead and underground along with internal wiring for illumination of Power House, dormitories, Store sheds, attached with Sidrapong Hydel Power Station.

8) **SWEEPING & CLEANING OFPOWER HOUSE & CONTROL ROOM INCLUDING SANITARY INSTALLATIONS, SWITCHYARD & TAILRACE :**

a) Sweeping, cleaning of Power House and attached road, side drain are to be done regularly, cleaning of glass panes, grills, gates, shutters, steel windows, staircase etc. are to be done regularly. Rolling shutters, windows and door to be maintained by providing grease oil once in a month for easy handling.

b) Cleaning of w.c., wash basin, urinal etc. with necessary disinfectants is to be done daily.

MAINTENANCE SCHEDULE FOR TURBO- GENERATOR SET:

DAILY CHECKS/ MAINTENANCE:

C. OIL SYSTEM :

1. To check the pressure range of oil.
2. To check the level of oil – top up of oil, if required.
3. To check any overheating of oil – record the oil temperature time to time.

D. RUNNER:

1. To check physically noise and vibration of runner and record it.

E. MAIN INLET VALVE AND BY PASS VALVE:

1. To check water leakage from seals.
2. To check lubrication of oil points.
3. To check operation of bypass valve.

F. DEFLECTOR SERVO, NOZZLE SERVO AND ALL OTHER HYDRAULIC OPERATED VALVES:

1. Oil leakage to be checked and the same to be attended, if there is leakage. Any rectification work including replacement work of pipe, changing of coupling, 'O' ring changing, if required, the same shall have to be carried out.

WEEKLY CHECKS / MAINTENANCE:

D. PRESSURE GAUGE:

1.To check correct working of the gauge. Record the defective pressure gauge, replacement of new pressure gauge, if required.

C. INLET & BYPASS VALVE:

1. Inlet valve and By- pass valve are to be checked.
2. To check the working of inlet valve, by pass valve and water leakage, if any, is to be taken care of as per requirement.

E. OIL PRESSURE:

1. Check the oil pressure. In case of increase of air bubbles in oil line the same shall be driven out thoroughly and immediately for safe operation of governing unit.

E. GREASING SYSTEM:

1. To check the lubrication of all the grease points and greasing pipe lines. Any leakage through pipe, its coupling is to be attended.

MONTHLY CHECKS/ MAINTENANCE:

C. HAND VALVES:

1. To check all the valves for opening and closing. Any repairing work/ replacement of valve, if required is to be done.

F. DEFLECTOR SERVOMOTOR AND NOZZLE SERVOMOTOR:

3. To check the valves and pipe fittings for leakage. Any repairing works is to be done as per requirement .Any adjustment in opening and closing of deflector servomotor and nozzle servomotor is to be checked and its timing shall be adjusted properly, if required.

G. OIL SYSTEM:

1. Check the leakage. Any repairing work including replacement of 'O' Ring, if required, is to be done.
2. Check the oil level& top-up, if required.

H. UNGREASED MOVING JOINTS:

3. Check and lubricate all ungreased moving joints properly. Care is to be taken so that greasing is done along the surfaces.

I. CONTROL AND ANNUNCIATORS IN RESPECT OF UNIT CONTROL BOARD AND OTHER PANELS:

1. To check all the control Indication lamps, fuses- replacement of lamp, fuses, if required, is to be done.
2. Contacts of control switches and push-buttons for proper operation are to be checked, clean them, if required.

3. To inspect the annnunciators – cleaning of operating coils and adjustment, if necessary, are to be done.

4. To check the bottom of annnunciators panel- replace the fuses/bulb, if required.

5. To check the operation of annnunciators.

H. TURBINE PROTECTION:

1. To check for cleanliness of panels and wiring, terminal block etc. Dust out with a feather duster, polish the panel cabinet, if required.

2. Master shut down to be checked.

3. To check the signals and alarms- any repairing/replacement work to be carried out.

4. To check the heaters and light inside panel. Any placement work to be done.

QUARTERLY CHECK/MAINTENANCE:

(u) **Runner:** To check for cavitations, erosion, pitting and other damage-record it.

(v) **Cooling water system:** To check the operation of cooling water pipe line, by-pass valve etc.

(w) **Linkage mechanism/cam mechanism:** To examine the linkage mechanism and all connecting Rods for back lash, greasing of bearing. Any machining work including fabrication of shear pin is to be done, if required. During any work on linkage/ cam mechanism, nozzle servo- their adjustment, if required, is to be done.

(x) **Main inlet valve:** To check the opening and closing. Any repairing/replacement, if required, is to be done.

(y) **Turbine housing lower part:** To check for looseness and cracks in weld, rectify the defect, if any.

(z) **Housing top cover:** To check the turbine cover for corrosion and cracks and welds-rectify it if required. cleaning and painting, if required are to be done.

(aa) **Couplings:** To check bolts and nuts sets screws and dowels etc. for tightness. Any tightness, if required, is to be done.

(bb) **Foundation:**

(1) To check physically foundation, vibration.

(2)To check concrete foundation for erosion and cracks, in case of anything abnormal, inform the controlling officer to investigate the cause and rectify the defects through Civil Wing.

(cc) **Cooling water system:** To check the piping and valves for any leakage. Any repair/replacement of leakage valve/ any repairing work on pipelines are to be done.

(dd) **Pressure gauges:** To inspect all water pipings and the respective valves connected to gauges. Any replacement /calibration of the Gauge, if possible at site, is to be carried out.

(ee) **Oil purifying unit:** Centrifuging of governor oil and bearing oil to be done. Any breakdown maintenance of oil purifying unit to be done. The centrifuging machine will be provided, if available.

HALFYEARLY CHECKS/MAINTENANCE:

(g) **Nozzle distribution valve:** Servicing of valve to done. Cup seals to be checked-replacement, if required, are to be done.

(h) **Turbine housing:** To clean turbine pit, remove gravel and sand etc.

(i) **Shaft seal:** Any leakage from shaft seal is to be attended.

ANNUAL CHECKS/MAINTENANCE:

(e) **Water Ways:** To dewater the penstock and examine the waterways for damage.

(f) **Foundation:** (i) To check physically the vibration
(ii) To concrete foundation erosion and cracks-records it.

(g) **Turbine housing:** To check for looseness and cracks in weld, record it and rectify the defect requirement.

(h) **Coupling:** (i) To check bolts and nuts set screws and dowels etc. for tightness
(ii) To check for fatigue and wear.
(iii) To check alignment with a dial indicator & record it.

(i) **Runner:** (i) To check for cavitations, erosion and pitting. Record the defects.
(ii) To check locking of nuts.

(f) **Main inlet valve:** Complete overhauling of MIV including inspection of Rubber seal. Any repairing, if required to be done.

(g) **Inlet and outlet pipes:** To check internal surface for-
(i) Cavitations, corrosion and pitting.
(ii) To check the drain valve and its piping.
(iii)To check studs and nuts and leakage of dismantling joints.

PERIODIC CHECKS/ MAINTENANCE OF PENSTOCK:

(g) To check and inspect the penstock lanes once in a month to prevent leakage of water from expansion joints, gland-packing etc.
The expansion joints, gland packing shall be lightened within permissible limit and necessary measures shall be adopted to prevent leakage of other locations also.

(h) Replace missing bolts and nuts of expansion joints.

(i) To grease saddle plates periodically.

(j) To repair damaged threads of stud, bolts and nuts as detected during periodic inspection and replace them as required.

(k) To inspect periodically all expansion joints and report leakage, if any.

NOTES:-

(14) All sorts of maintenance works as already described for daily/quarter/half-yearly/annually are Mandatory. However, if required, the frequency of works need be done more than schedule without any extra charge.

(15) For any reason as and when required dewatering the penstock water to be done through penstock drain pipe or through manhole opening.

(16) Before dismantling any part of the machine, match mark the parts, if they are not already marked properly.

(17) When reassembling all or any parts of the machine, use graphite, grease or any other antiseize compound on all the thread and sliding surfaces to prevent scratching.

(18) All loose components should be labelled for each identification during reassembly.

(19) For any sort of maintenance work, normal/major spares needed and available with the department will be supplied. Spares not available may be prepared by the contractor without any extra charge from the raw materials supplied by the department.

(20) The maintenance works as mentioned above are to be recorded in a register equipments-wise. The detailed name plate of the equipment shall be noted down at the initial stage.

SCOPE NORMAL MAINTENANCE WORK IN RESPECT OF 6.6KV SWITCHYARD:

(3) DAILY CHECKS/MAINTENANCE:

(E) TRANSFORMERS:

(vii) To check oil level of transformer and Silica gel in the breather.

(viii) Oil & winding temperature are to be checked and recorded daily.

(ix) Checking the oil leakage from main tank, radiator, conservator and pressure relief device.

(F) CIRCUIT BREAKERS:

(v) To check on-off indication for correct position.

(vi) To check the indication lamps**.**

(4) WEEKLY CHECKS/MAINTENANCE:

(C) CIRCUIT BREAKERS:

i To check water ingress inside housing.

ii To check damage and crack of bushing, looseness of nuts and bolts.

(D) TRANSFORMERS:

(i) Condition of Silica gel provided with each Transformer is to be checked and to be changed if the colour of the silica gel becomes pink due to moisture absorption.

(E) CIRCUIT BREAKERS:

(i) To check looseness of nuts and bolts.

(ii) Checking and verifying the mechanism for spring charging.

(F) CONTROL EQUIPMENT AND WIRING:

(i) To check loose connection of electrical wiring.

(ii) To check insulation of wire for cuts, burns etc.

(iii) Checking the free movement of contactor, switches etc. monthly.

(G) 33 KV ISOLATOR:

(i) Checking the insulation of wire for cuts, burns and tightening the loose wires ,if any.

(ii) Checking and adjusting free movement of contactor, switches etc.

(7) HALF YEARLY CHECKS/MAINTENANCE:

(C) GENERAL:

(i) Checking the lubrication of operating mechanism.

(ii) Checking and adjusting the looseness of nuts and bolts.

(iii) To check free movement of trip and closing mechanism.

(D) CTs AND PTS:

(i) Cleaning and tightening of contacts.

(ii) Oil filling, if required.

(E) TRANSFORMERS:

(i) Checking and testing of Transformer oil

(ii) Oil filling, if required.

(F) EARTHING:

1. Checking of earth resistance with proper instrument.

(8) YEARLY CHECKS/MAINTENANCE:

(C) TRANSFORMERS:

(i) Checking the condition of transformer oil and testing of the same, if necessary,

(ii) Oil filling, if required.

(iii) Cleaning the dust deposited on bushing.

(iv) Checking the cracks on bushing.

(v) Cleaning the rust on any metal part.

(vi) Checking the Cable terminals.

(vii) To check sulphation, discolouration, looseness of control cables in marshalling box.

(viii) Checking level of transformer bushing.

(ix) Testing the insulation resistance of winding.

(x) To test various alarms, trip setting of transformers.

(xi) Checking the condition of silica gel and change it if required.

(D) CIRCUIT BREAKERS:

(i) To check the rusting of breaker housing.

(ii) To test various alarm/trip setting.

(iii) To check the insulation resistance.

(iv) To check the condition of springs etc.

(F) ISOLATORS:

1. Maintenance of different contacts and greasing is to be done yearly.

(F) CTs AND PTs:

(i) Testing the insulation resistance of all CTs and PTs

(ii) Oil-filling, if required.

4. Little Rangit Hydel Power Station

BRIEF DETAILS OF INSPECTION & MAINTENANCE SCHEDULES

REGULAR MAINTENANCE WORK

1) C.W. PIPELINES:

i. Attending any pipe/valve/gauges of CW pipeline/common header either damaged or chocked immediately and repair/replacement of the same.

ii. Thorough cleaning of water pipelines by flushing at least once half yearly.

2) OPERATION & MAINTENANCE OF CRANES:

Operation & maintenance of crane (overhead) in the Power House is to be carried out by the contractor.

3) MAINTENANCE OF ILLUMINATION SYSTEM:

Regular maintenance and fittings of illumination system of the power house, switchyard and Battery maintenance are to be carried out by the contractor.

4) REGULAR MAINTENANCE OF TURBINE &GENERATOR SETS AND ASSOCIATED PANELS IN THE CONTROL ROOM:

i) Regular checking of the running generator outwardly, its vibration, winding temperature, bearing temperature, speed, adjustment of spring pressure on slip ring, cleaning of carbon deposition by emery paper and petrol as and when necessary. Abnormality, if any, must be brought to the notice of the controlling officer.

ii) Opening of Generator casing (once in a year) for thorough cleaning without dismantling of rotor, tightening of nuts and bolts, checking of stator holding insulator.

iii) To attend any sort of emergency breakdown maintenance which may require opening of generator casing in addition to routine jobs.

iv) To attend any unscheduled program of generator at any time.

v) To attend any problem of the excitation system, its control panels, excitation transformer and rectification of the same.

vi) To attend any trouble of governor, economizer and associated gear pump, distribution valve, pilot valve, servo motor, deflector and nozzle mechanism operating system.

vii) Regular maintenance of 415 Volt breakers, AC/DC distribution board, station batteries and battery charges.

viii) Dismantling and re-erection of CTs/ PTs/CVTs at 33 KV Switchyard, if required.

MAINTENANCE SCHEDULE FOR TURBO- GENERATOR SET

DAILY CHECKS/ MAINTENANCE:

A. OIL SYSTEM :

i. To check the pressure range of oil.

ii. To check the level of oil – top up of oil, if required.

iii. To check any overheating of oil – record the oil temperature time to time.

B. RUNNER:

To check physically noise and vibration of runner and record it.

C. MAIN INLET VALVE AND BY PASS VALVE:

i. To check water leakage from seals.
ii. To check lubrication of oil points.
iii. To check operation of bypass valve.

D. DEFLECTOR SERVO, NOZZLE SERVO AND ALL OTHER HYDRAULIC OPERATED VALVES:

Oil leakage to be checked and the same to be attended, if there is leakage. Any rectification work including replacement work of pipe, changing of coupling, 'O' ring changing, if required, the same shall have to be carried out.

WEEKLY CHECKS / MAINTENANCE:

A. PRESSURE GAUGE:

To check correct working of the gauge. Record the defective pressure gauge, replacement of new pressure gauge, if required.

B. INLET & BYPASS VALVE:

i. Inlet valve and By- pass valve are to be checked.
ii. To check the working of inlet valve, by pass valve and water leakage, if any, is to be taken care of as per requirement.

C. OIL PRESSURE:

Check the oil pressure. In case of increase of air bubbles in oil line the same shall be driven out thoroughly and immediately for safe operation of governing unit.

D. GREASING SYSTEM:

To check the lubrication of all the grease points and greasing pipe lines. Any leakage through pipe, its coupling is to be attended.

MONTHLY CHECKS/ MAINTENANCE:

A. HAND VALVES:

To check all the valves for opening and closing. Any repairing work/ replacement of valve, if required is to be done.

B. DEFLECTOR SERVOMOTOR AND NOZZLE SERVOMOTOR:

To check the valves and pipe fittings for leakage. Any repairing works is to be done as per requirement .Any adjustment in opening and closing of deflector servomotor and nozzle servomotor is to be checked and its timing shall be adjusted properly, if required.

C. OIL SYSTEM:

i. Check the leakage. Any repairing work including replacement of 'O' Ring, if required, isto be done.
ii. Check the oil level & top-up, if required.

D. UNGREASED MOVING JOINTS:

Check and lubricate all ungreased moving joints properly. Care is to be taken so that greasing is done along the surfaces.

E. CONTROL AND ANNUNCIATORS IN RESPECT OF UNIT CONTROL BOARD AND OTHER PANELS:

i. To check all the control Indication lamps, fuses- replacement of lamp, fuses, if required, is to be done.
ii. Contacts of control switches and push-buttons for proper operation are to be checked, clean them, if required.
iii. To inspect the annnunciators– cleaning of operating coils and adjustment, if necessary, are to be done.
iv. To check the bottom of annnunciators panel- replace the fuses/bulb, if required.
v. To check the operation of annnunciators.

F. TURBINE PROTECTION:

i. To check for cleanliness of panels and wiring, terminal block etc. Dust out with a feather duster, polish the panel cabinet, if required.
ii. Master shut down to be checked.
iii. To check the signals and alarms- any repairing/replacement work to be carried out.
iv. To check the heaters and light inside panel. Any placement work to be done.

QUARTERLY CHECK/MAINTENANCE:

(a) **Runner:** To check for cavitation, erosion, pitting and other damage-record it.

(b) **Cooling water system:** To check the operation of cooling water pipe line, by-pass valve etc.

(c) **Linkage mechanism/cam mechanism:** To examine the linkage mechanism and all connecting Rods for back lash, greasing of bearing. Any machining work including fabrication of shear pin is to be done, if required. During any work on linkage/ cam mechanism, nozzle servo- their adjustment, if required, is to be done.

(d) **Main inlet valve:** To check the opening and closing. Any repairing/replacement, if required, isto be done.

(e) **Turbine housing lower part:** To check for looseness and cracks in weld, rectify the defect, if any.

(f) **Housing top cover:** To check the turbine cover for corrosion and cracks and welds-rectify it if required. cleaning and painting, if required are to be done.

(g) **Couplings:** To check bolts and nuts sets screws and dowels etc. for tightness. Any tightness, if required, is to be done.

(h) **Foundation:**

i. To check physically foundation, vibration.
ii. To check concrete foundation for erosion and cracks, in case of anything abnormal, inform the controlling officer to investigate the cause and rectify the defects through Civil Wing.

(i) **Cooling water system:** To check the piping and valves for any leakage. Any repair/replacement of leakage valve/ any repairing work on pipelines are to be done.

(j) **Pressure gauges:** To inspect all water piping and the respective valves connected to gauges. Any replacement /calibration of the Gauge, if possible at site, is to be carried out.

(k) **Oil purifying unit:** Centrifuging of governor oil and bearing oil to be done. Any breakdown maintenance of oil purifying unit to be done. The centrifuging machine will be provided, if available.

HALF-YEARLY CHECKS/MAINTENANCE:

(a) **Nozzle distribution valve:** Servicing of valve to done. Cup seals to be checked-replacement, if required, is to be done.

(b) **Turbine housing:** To clean turbine pit, remove gravel and sand etc.

(c) **Shaft seal:** Any leakage from shaft seal is to be attended.

ANNUAL CHECKS/MAINTENANCE:

(a) **Water Ways:** To dewater the penstock and examine the waterways for damage.

(b) **Foundation:**

i. To check physically the vibration

ii. To concrete foundation erosion and cracks-records it.

(c) **Turbine housing:** To check for looseness and cracks in weld, record it and rectify the defect requirement.

(d) **Coupling:**

i. To check bolts and nuts set screws and dowels etc. for tightness.

ii. To check for fatigue and wear.

iii. To check alignment with a dial indicator &record it.

(e) **Runner:** (i) To check for cavitations, erosion and pitting. Record the defects.
(ii) To check locking of nuts.

(f) **Main inlet valve:** Complete overhauling of MIV including inspection of Rubber seal. Any repairing, if required to be done.

(g) **Inlet and outlet pipes:** To check internal surface for-
(i) Cavitations, corrosion and pitting.
(ii) To check the drain valve and its piping.
(iii)To check studs and nuts and leakage of dismantling joints.

PERIODIC CHECKS/MAINTENANCE OF PENSTOCK:

(a) To check and inspect the penstock lanes once in a month to prevent leakage of water from expansion joints, gland-packing etc.
The expansion joints, gland packing shall be lightened within permissible limit and necessary measures shall be adopted to prevent leakage of other locations also.

(b) Replace missing bolts and nuts of expansion joints.

(c) To grease saddle plates periodically.

(d) To repair damaged threads of stud, bolts and nuts as detected during periodic inspection and replace them as required.

(e) To inspect periodically all expansion joints and report leakage, if any.

NOTES:-

(1) All sorts of maintenance works as already described for daily/quarter/half-yearly/annually are mandatory. However, if required, the frequency of works need be done more than schedule without any extra charge.

(2) For any reason as and when required dewatering the penstock water to be done through penstock drainpipe or through manhole opening.

(3) Before dismantling any part of the machine, match mark the parts, if they are not already marked properly.

(4) When reassembling all or any parts of the machine, use graphite, grease or any other antiseize compound on all the thread and sliding surfaces to prevent scratching.

(5) All loose components should be labeled for each identification during reassembly.

(6) For any sort of maintenance work, normal/major spares needed and available with the department will be supplied. Spares not available may be prepared by the contractor without any extra charge from the raw materials supplied by the department.

(7) The maintenance works as mentioned above are to be recorded in a register equipments-wise. The detailed name plate of the equipment shall be noted down at the initial stage.

SCOPE OF NORMAL MAINTENANCE WORK IN RESPECT OF 33 kV SWITCH YARD:

(1) DAILY CHECKS/MAINTENANCE:

(A) TRANSFORMERS:

i. To check oil level of transformer and Silica gel in the breather.
ii. Oil & winding temperature are to be checked and recorded daily.
iii. Checking the oil leakage from main tank, radiator, conservator and pressure relief device.

(B) CIRCUIT BREAKERS:

i. To check on-off indication for correct position.
ii. To check the indication lamps.

(2) WEEKLY CHECKS/MAINTENANCE:

(A) CIRCUIT BREAKERS:

i. To check water ingress inside housing.
ii. To check damage and crack of bushing, looseness of nuts and bolts.

(B) TRANSFORMERS:

i. Condition of Silica gel provided with each Transformer is to be checked and to be changed if the colour of the silica gel becomes pink due to moisture absorption.

(C) CIRCUIT BREAKERS:

i. To check looseness of nuts and bolts.
ii. Checking and verifying the mechanism for spring charging.

(D) CONTROL EQUIPMENT AND WIRING:

i) To check loose connection of electrical wiring.
ii. To check insulation of wire for cuts, burns etc.
iii. Checking the free movement of contactor, switches etc. monthly.

(E) 33 KV ISOLATOR:

i. Checking the insulation of wire for cuts, burns and tightening the loose wires, if any.

ii. Checking and adjusting free movement of contactor, switches etc.

(3) HALF YEARLY CHECKS/ MAINTENANCE:

(A) GENERAL:

i. Checking the lubrication of operating mechanism.

ii. Checking and adjusting the looseness of nuts and bolts.

iii. To check free movement of trip and closing mechanism.

(B) CTs AND PTS:

i. Cleaning and tightening of contacts.

ii. Oil filling, if required.

TRANSFORMERS:

i. Checking and testing of Transformer oil.

ii. Oil filling, if required.

(D) EARTHING:

i. Checking of earth resistance with proper instrument.

(4) YEARLY CHECKS/MAINTENANCE:

(A) TRANSFORMERS:

i. Checking the condition of transformer oil and testing of the same, if necessary,

ii. Oil filling, if required.

iii. Cleaning the dust deposited on bushing.

iv. Checking the cracks on bushing.

v. Cleaning the rust on any metal part.

vi. Checking the 3.3 KV Cable terminals.

vii. To check sulphation, discolouration, looseness of control cables in marshalling box.

viii. Checking level of transformer bushing.

ix. Testing the insulation resistance of winding.

x. To test various alarms, trip setting of transformers.

xi. Checking the condition of silica gel and change it if required.

(B) CIRCUIT BREAKERS:

i. To check the rusting of breaker housing.

ii. To test various alarm/trip setting.

iii. To check the insulation resistance.

iv. To check the condition of springs etc.

(C) 33 KV ISOLATORS:

i. Maintenance of different contacts and greasing is to be done yearly.

(D) CTs AND PTs:

i. Testing the insulation resistance of all CTs and PTs

ii. Oil-filling, if required.

5. Mungpoo-Kalikhola Hydel Power Station

BRIEF DETAILS OF INSPECTION & MAINTENANCE SCHEDULES

REGULAR MAINTENANCE WORK

5) **C.W. PIPELINES:**

IV) Attending any pipe/valve/gauges of CW pipeline/common header either damaged or chocked immediately and repair/replacement of the same.

V) Thorough cleaning of water pipelines by flushing at least once half yearly.

6) **OPERATION & MAINTENANCE OF CRANES:**

Operation & maintenance of crane (overhead) in the Power House is to be carried out by the contractor.

7) **MAINTENANCE OF ILLUMINATION SYSTEM:**

Regular maintenance and fittings of illumination system of the power house, switchyard and Battery maintenance are to be carried out by the contractor.

8) **REGULAR MAINTENANCE OF TURBINE & GENERATOR SETS AND ASSOCIATED PANELS IN THE CONTROL ROOM:**

ix) Regular checking of the running generator outwardly, its vibration, winding temperature, bearing temperature, speed, adjustment of spring pressure on slip ring, cleaning of carbon deposition by emery paper and petrol as and when necessary. Abnormality, if any, must be brought to the notice of the controlling officer.

x) Opening of Generator casing (once in a year) for thorough cleaning without dismantling of rotor, tightening of nuts and bolts, checking of stator holding insulator.

xi) To attend any sort of emergency breakdown maintenance which may require opening of generator casing in addition to routine jobs.

xii) To attend any unscheduled programme of generator at any time.

xiii) To attend any problem of the excitation system, its control panels, excitation transformer and rectification of the same.

xiv) To attend any trouble of governor, economiser and associated gear pump, distribution valve, pilot valve, servo motor, deflector and nozzle mechanism operating system.

xv) Regular maintenance of 415 Volt breakers, AC/DC distribution board, station batteries and battery charges.

xvi) Dismantling and re-erection of CTs/ PTs/CVTs at 33 KV Switchyard, if required.

MAINTENANCE SCHEDULE FOR TURBO- GENERATOR SET

DAILY CHECKS/ MAINTENANCE:

D. OIL SYSTEM :

1. To check the pressure range of oil.
2. To check the level of oil – top up of oil, if required.

3. To check any overheating of oil – record the oil temperature time to time.

E. RUNNER:

1. To check physically noise and vibration of runner and record it.

F. MAIN INLET VALVE AND BY PASS VALVE:

1. To check water leakage from seals.
2. To check lubrication of oil points.
3. To check operation of bypass valve.

G. DEFLECTOR SERVO, NOZZLE SERVO AND ALL OTHER HYDRAULIC OPERATED VALVES:

1. Oil leakage to be checked and the same to be attended, if there is leakage. Any rectification work including replacement of pipe, changing of coupling, 'O' ring changing, if required, the same shall have to be carried out.

WEEKLY CHECKS / MAINTENANCE:

E. PRESSURE GAUGE:

1. To check correct working of the gauge. Record the defective pressure gauge, replacement of new pressure gauge, if required

F. INLET & BYPASS VALVE:

1. Inlet valve and By- pass valve are to be checked.
2. To check the working of inlet valve, by pass valve and water leakage, if any, is to be taken care of as per requirement.

C. OIL PRESSURE:

1. Check the oil pressure. In case of increase of air bubbles in oil line the same shall be driven out thoroughly and immediately for safe operation of governing unit.

E. GREASING SYSTEM:

1. To check the lubrication of all the grease points and greasing pipe lines. Any leakage through pipe, its coupling is to be attended.

MONTHLY CHECKS/ MAINTENANCE:

D. HAND VALVES:

1. To check all the valves for opening and closing. Any repairing work/ replacement of valve, if required is to be done.

H. DEFLECTOR SERVOMOTOR AND NOZZLE SERVOMOTOR:

4. To check the valves and pipe fittings for leakage. Any repairing works is to be done as per requirement. Any adjustment in opening and closing of deflector servomotor and nozzle servomotor is to be checked and its timing shall be adjusted properly, if required.

I. OIL SYSTEM:

1. Check the leakage. Any repairing work including replacement of 'O' Ring, if required, is to be done.
2. Check the oil level & top-up, if required.

J. UNGREASED MOVING JOINTS:

4. Check and lubricate all ungreased moving joints properly. Care is to be taken so that greasing is done along the surfaces.

K. CONTROL AND ANNUNCIATORS IN RESPECT OF UNIT CONTROL BOARD AND OTHER PANELS:

1. To check all the control Indication lamps, fuses- replacement of lamp, fuses, if required, is to be done.
2. Contacts of control switches and push-buttons for proper operation are to be checked, clean them, if required.
3. To inspect the annnunciators– cleaning of operating coils and adjustment, if necessary, are to be done.
4. To check the bottom of annnunciators panel- replace the fuses/bulb, if required.
5. To check the operation of annnunciators.

I. TURBINE PROTECTION:

1. To check for cleanliness of panels and wiring, terminal block etc. Dust out with a feather duster, polish the panel cabinet, if required.
2. Master shut down to be checked.
3. To check the signals and alarms- any repairing/replacement work to be carried out.
4. To check the heaters and light inside panel. Any placement work to be done.

QUARTERLY CHECK/MAINTENANCE:

(ff) **Runner:** To check for cavitation, erosion, pitting and other damage-record it.

(gg) **Cooling water system:** To check the operation of cooling water pipe line, by-pass valve etc.

(hh) **Linkage mechanism/cam mechanism:** To examine the linkage mechanism and all connecting Rods for back lash, greasing of bearing. Any machining work including fabrication of shear pin is to be done, if required. During any work on linkage/ cam mechanism, nozzle servo- their adjustment, if required, is to be done.

(ii) **Main inlet valve:** To check the opening and closing. Any repairing/replacement, if required, is to be done.

(jj) **Turbine housing lower part:** To check for looseness and cracks in weld, rectify the defect, if any.

(kk) **Housing top cover:** To check the turbine cover for corrosion and cracks and welds-rectify it if required. Cleaning and painting, if required are to be done.

(ll) **Couplings:** To check bolts and nuts sets screws and dowels etc. for tightness. Any tightness, if required, is to be done.

(mm) **Foundation:** (1) To check physically foundation, vibration.

(2)To check concrete foundation for erosion and cracks, in case of anything abnormal, inform the controlling officer to investigate the cause and rectify the defects through Civil Wing.

(nn) **Cooling water system:** To check the piping and valves for any leakage. Any repair/replacement of leakage valve/ any repairing work on pipelines are to be done.

(oo) **Pressure gauges:** To inspect all water pipings and the respective valves connected to gauges. Any replacement /calibration of the Gauge, if possible at site, is to be carried out.

(pp) **Oil purifying unit:** Centrifuging of governor oil and bearing oil to be done. Any breakdown maintenance of oil purifying unit to be done. The centrifuging machine will be provided, if available.

HALFYEARLY CHECKS/MAINTENANCE:

(j) **Nozzle distribution valve:** Servicing of valve to done. Cup seals to be checked-replacement, if required, is to be done.

(k) **Turbine housing:** To clean turbine pit, remove gravel and sand etc.

(l) **Shaft seal:** Any leakage from shaft seal is to be attended.

ANNUAL CHECKS/MAINTENANCE:

(g) **Water Ways:** To dewater the penstock and examine the waterways for damage.

(h) **Foundation:** (i) To check physically the vibration

(iii) To concrete foundation erosion and cracks-records it.

(j) **Turbine housing:** To check for looseness and cracks in weld, record it and rectify the defect requirement.

(d) **Coupling:** (i) To check bolts and nuts set screws and dowels etc. for tightness

(ii)To check for fatigue and wear.

(iii)To check alignment with a dial indicator & record it.

(e) **Runner:** (i) To check for cavitations, erosion and pitting. Record the defects.

(ii) To check locking of nuts.

(f) **Main inlet valve:** Complete overhauling of MIV including inspection of Rubber seal. Any repairing, if required to be done.

(g) **Inlet and outlet pipes:** To check internal surface for-

(i) Cavitations, corrosion and pitting.

(ii) To check the drain valve and its piping.

(iii)To check studs and nuts and leakage of dismantling joints.

PERIODIC CHECKS/MAINTENANCE OF PENSTOCK:

(l) To check and inspect the penstock lines once in a month to prevent leakage of water from expansion joints, gland-packing etc. The expansion joints, gland packing shall be tightened within permissible limit and necessary measures shall be adopted to prevent leakage of other locations also.

(m) Replace missing bolts and nuts of expansion joints.

(n) To grease saddle plates periodically.

(o) To repair damaged threads of stud, bolts and nuts as detected during periodic inspection and replace them as required.

(p) To inspect periodically all expansion joints and report leakage, if any.

NOTES:-

(21) All sorts of maintenance works as already described for daily/quarter/half-yearly/annually are Mandatory. However, if required, the frequency of works need be done more than schedule without any extra charge.

(22) For any reason as and when required dewatering the penstock water to be done through penstock drainpipe or through manhole opening.

(23) Before dismantling any part of the machine, match mark the parts, if they are not already marked properly.

(24) When reassembling all or any parts of the machine, use graphite, grease or any other antiseize compound on all the thread and sliding surfaces to prevent scratching.

(25) All loose components should be labelled for each identification during reassembly.

(26) For any sort of maintenance work, normal/major spares needed and available with the department will be supplied. Spares not available may be prepared by the contractor without any extra charge from the raw materials supplied by the department.

(27) The maintenance works as mentioned above are to be recorded in a register equipments-wise. The detailed name plate of the equipment shall be noted down at the initial stage.

SCOPE NORMAL MAINTENANCE WORK IN RESPECT OF 33 KV SWITCH YARD

(4) DAILY CHECKS/MAINTENANCE:

(G) TRANSFORMERS:

(x) To check oil level of transformer and Silica gel in the breather.

(xi) Oil & winding temperature are to be checked and recorded daily.

(xii) Checking the oil leakage from main tank, radiator, conservator and pressure relief device.

(H) CIRCUIT BREAKERS:

(vii) To check on-off indication for correct position.

(viii) To check the indication lamps**.**

(5) WEEKLY CHECKS/MAINTENANCE:

(D) CIRCUIT BREAKERS:

(a) To check water ingress inside housing.

(b) To check damage and crack of bushing, looseness of nuts and bolts.

(E) TRANSFORMERS:

(i) Condition of Silica gel provided with each Transformer is to be checked and to be changed if the colour of the silica gel becomes pink due to moisture absorption.

(F) CIRCUIT BREAKERS:

(i) To check looseness of nuts and bolts.

(ii) Checking and verifying the mechanism for spring charging.

(G) CONTROL EQUIPMENT AND WIRING:

(i) To check loose connection of electrical wiring.

(ii) To check insulation of wire for cuts, burns etc.

(iii) Checking the free movement of contactor, switches etc. monthly.

(H) 33 KV ISOLATOR:

(i) Checking the insulation of wire for cuts, burns and tightening the loose wires, if any.

(ii) Checking and adjusting free movement of contactor, switches etc.

(9) HALF YEARLY CHECKS/MAINTENANCE:

(D) GENERAL:

(i) Checking the lubrication of operating mechanism.

(ii) Checking and adjusting the looseness of nuts and bolts.

(iii) To check free movement of trip and closing mechanism.

(E) CTs AND PTS:

(i) Cleaning and tightening of contacts.

(ii) Oil filling, if required.

(F) TRANSFORMERS:

(i) Checking and testing of Transformer oil

(ii) Oil filling, if required.

(G) EARTHING:

1. Checking of earth resistance with proper instrument.

(10) YEARLY CHECKS/MAINTENANCE:

(D) TRANSFORMERS:

(i) Checking the condition of transformer oil and testing of the same, if necessary,

(ii) Oil filling, if required.

(iii) Cleaning the dust deposited on bushing.

(iv) Checking the cracks on bushing.

(v) Cleaning the rust on any metal part.

(vi) Checking the 3.3 KV Cable terminals.

(vii) To check sulphation, discolouration, looseness of control cables in marshalling box.

(viii) Checking level of transformer bushing.

(ix) Testing the insulation resistance of winding.

(x) To test various alarms, trip setting of transformers.

(xi) Checking the condition of silica gel and change it if required.

(E) CIRCUIT BREAKERS:

(i) To check the rusting of breaker housing.

(ii) To test various alarm/trip setting.

(iii) To check the insulation resistance.

(iv) To check the condition of springs etc.

(G) 33 KV ISOLATORS:

(i) Maintenance of different contacts and greasing is to be done yearly.

(G) CTs AND PTs:

(i) Testing the insulation resistance of all CTs and PTs

(ii) Oil-filling, if required.

SECTION- VII

ANNEXURE/FORMS

Annexure-I

CHECK LIST

Sl. No.	Scanned Copy of Documents to be uploaded	Name of folder	To be submitted in cover	Submitted (Y/ N)
1	Check List (Annexure-I)	FORMS	Statutory cover (Technical proposal)	
2	Declaration by the Tenderer (Annexure-V)	FORMS	Statutory cover (Technical proposal)	
4	Earnest Money Deposit Challan/BG (copy)	DRAFTS	Statutory cover (Technical proposal)	
5	Tender Document with Stamp & Signature by authorized person.	NIT	Statutory cover (Technical proposal)	
6	Addenda/corrigenda, if published	NIT	Statutory cover (Technical proposal)	
7	Format of Letter of Bid (Annexure-IV)	FORMS	Statutory cover (Technical proposal)	
8	Pro-forma for undertaking to be submitted by the Bidders (Annexure-III)	FORMS	Statutory cover (Technical proposal)	
9	Statement of similar orders executed during last 7 years (Annexure-X)	FORMS	Statutory cover (Technical proposal)	
10	**Technical Credential** : Contract Order(s) alongwith completion certificate as per the NIeT	CREDENTIAL	Non-Statutory cover (Technical proposal)	
11	Proof of Company Incorporation/ Trade License	COMPANY DETAILS	Non-Statutory cover (Technical proposal)	
12	EPF registration certificate	CERTIFICATES	Non-Statutory cover (Technical proposal)	
13	ESI Certificate for ESI coverage areas only	CERTIFICATES	Non-Statutory cover (Technical proposal)	
14	PAN Card details	CERTIFICATES	Non-Statutory cover (Technical proposal)	
15	GSTIN registration certificate	CERTIFICATES	Non-Statutory cover (Technical proposal)	
16	Professional Tax documents	CERTIFICATES	Non-Statutory cover (Technical proposal)	
17	Income Tax return for the last 03 (three) Assessment Years	FINANCIAL INFORMATION	Non-Statutory cover (Technical proposal)	
18	Summary statement of average annual turnover (Annexure - II)	FORMS	Statutory cover (Technical proposal)	
19	Evidence of Access to or Availability of Credit/Facilities (Annexure - XIII)	FINANCIAL INFORMATION	Non-Statutory cover (Technical proposal)	
20	Audited annual reports on accounts for financial years 2019-	FINANCIAL INFORMATION	Non-Statutory cover (Technical proposal)	

	20, 2020-21 and 2021-22.			
21	Average annual turnover for financial years 2019-20, 2020-21 and 2021-22.	FINANCIAL INFORMATION	Non-Statutory cover (Technical proposal)	
22	Declaration of Black listing/ Holiday listing (Annexure - XI)	DECLARATION	Non-Statutory cover (Technical proposal)	
23	Other Allied Information of Bidders Forms (Annexure – XII)	FORMS	Statutory cover (Technical proposal)	
24	Contractor's Personnel for regular Establishment (Either Annexure – VI or VII or VIII or IX as per applicability)	FORMS	Statutory cover (Technical proposal)	

SIGNATURE OF THE TENDERER WITH OFFICE SEAL

Annexure-II

CERTIFICATE REGARDING SUMMARY STATEMENT OF YEARLY TURNOVER

This is to certify that the following statement is the summary of the audited Balance Sheet arrived in favour of . . . . for the 03 (three) consecutive years as mentioned below.

Sl. No.	Financial		Remarks
	Financial Year	Turnover rounded up to two digit after decimal	
1.	2023-24		
2.	2024-25		
3.	2025-26		
Total			

Average Turnover (In Rupees):

……

SIGNATURE OF THE TENDERER WITH OFFICE SEAL

ANNEXURE –III

PROFORMA FOR UNDERTAKING TO BE SUBMITTED BY THE BIDDER

(For genuineness of the information furnished on-line and authenticity of the documents produced before Tender Committee for verification in support of his eligibility)

I, _____, Partner/Legal Attorney/Accredited representative of M/s _____,solemnly declare that:

1. We are submitting tender for the work _____ _____against Tender Notice No. _____ Dated _____. None of the partners of our firm is relative employee of (Name of the Company)_____ _____
2. All information furnished by us in respect of fulfilment of eligibility criteria and qualification information of this Tender is complete, correct and true.
3. All documents/credentials submitted along with this Tender are genuine, authentic, true and valid.
4. If any information and document submitted is found to be false/incorrect any time, department may cancel my Tender and action as deemed fit may be taken against us, including termination of the contract, forfeiture of all dues including Earnest Money and banning/delisting of our firm and all partners of the firm etc.

Signature of the Tenderer

Dated: _____

ANNEXURE-IV

Format for Letter of Bid

LETTER HEAD OF BIDDER (AS ENROLLED ONLINE ON e-tendering PORTAL OF NIC)

To

The Tender Committee

Sub : Letter of Bid for the work

Ref : 1. NIT No----------dated----------

2. Tender Id No----------

Dear Sir,

We offer to execute the work as per our offered bill of quantity in accordance with the conditions of the NIT document as available in the website. The details of the EMD being submitted by us has been furnished on-line.

This Bid and your subsequent Letter of Acceptance/Work Order shall constitute a binding contract between us.

We hereby confirm our acceptance of all the terms and conditions of the NIT document unconditionally.

Signature of the Tenderer with seal

Dated:_____

ANNEXURE-V

DECLARATION BY THE TENDERER

I/We have inspected the site of work and have made myself/ourselves fully acquainted with local conditions in and around the site of work. I /We have carefully gone through the Notice Inviting Tender and other tender documents mentioned therein. I/We have also carefully gone through the 'Bill of Quantities'.

My/Our tender is offered taking due consideration of all factors regarding the local site conditions stated in this Detailed Notice Inviting Tender to complete the proposed construction in all respects.

I/We promise to abide by all the stipulations of the contract documents and carry out and complete the work to the satisfaction of the department.

I/We also agree to procure tools and plants, at my/our cost required for the work.

I/We declare that neither I/We nor any of my/our constituent partners had been barred to participate in any Tender by any Government Department/Semi-Govt./Govt. Undertakings/ Enterprise etc. during the last 5 (five) years prior to the date of this NIT.

I/We declare that I/ or any of my/our constituent partner have neither abandoned any work nor any of my/our contract have been rescinded during the last 5 (five) years.

_____

Signature of Tenderer with Seal

_____

Postal address of the Tenderer

ANNEXURE-VI

(For work mentioned under Sl.No.1 & 3 in section-I of NIeT)

CONTRACTOR'S PERSONNEL FOR REGULAR ESTABLISHMENT

Sl. No.	Category	Name	Educational Qualification	Experience	Wages
01.	Site-in-charge (should have minimum qualification of Diploma or equivalent in Engineering and possesses sufficient experience in undertaking Maintenance & Operation work of Small Hydel Power Station as a whole of comparable capacity with 3.3/33KV Substation, equipment including their control & protection system-1No.				
02.	**Skilled Persons:** i) 2 nos./ shift at Power House including 2nos for reserved shift				
03.	**Unskilled Person:** 1 no. at Power House (Sweeper)				

Note: Skilled personnel assigned for this job should have previous experience in the installation of similar equipment and fully familiar with the connection details and have knowledge of reading Mechanical/ Electrical drawings. Contractor shall also employ required number of skilled labour as considered necessary to complete the work as per schedule. Wages must be incorporated. The agency has to engage at least 8nos. of skilled personnel to allow everybody a weekly off day and leave taken by the working personnel in order to maintain smooth O&M activities maintaining the manpower strength.

Signature of the Bidder:

Seal of the Company:

Date:

ANNEXURE-VII

(For work mentioned under Sl.No.2 in section-I of NIeT)

CONTRACTOR'S PERSONNEL FOR REGULAR ESTABLISHMENT

Sl. No.	Category	Name	Educational Qualification	Experience	Wages
01.	Site-in-charge (should have minimum qualification of Diploma or equivalent in Engineering and possesses sufficient experience in undertaking Maintenance & Operation work of Small Hydel Power Station as a whole of comparable capacity with 3.3/33KV Substation, equipment including their control & protection system-1No.				
02.	**Skilled Persons:** ii) 2 nos./ shift at Power House including 2nos for reserved shift iii) 1 no. for catering, maintenance and upkeeping of pre-fabricated building				
03.	**Unskilled Person:** i) 1 no. at Power House (Sweeper) ii) 1 no. for catering, maintenance and upkeeping of pre-fabricated building				

Note: Skilled personnel assigned for this job should have previous experience in the installation of similar equipment and fully familiar with the connection details and have knowledge of reading Mechanical/ Electrical drawings. Contractor shall also employ required number of skilled labour as considered necessary to complete the work as per schedule. Wages must be incorporated. The agency has to engage at least 8nos. of skilled personnel to allow everybody a weekly off day and leave taken by the working personnel in order to maintain smooth O&M activities maintaining the manpower strength.

Signature of the Bidder:

Seal of the Company:

Date:

ANNEXURE-VIII

(For work mentioned under Sl.No.4 in section-I of NIeT)

CONTRACTOR'S PERSONNEL FOR REGULAR ESTABLISHMENT

Sl. No.	Category	Name	Educational Qualification	Experience	Wages
01.	Site-in-charge (should have minimum qualification of Diploma or equivalent in Engineering and possesses sufficient experience in undertaking Maintenance & Operation work of Small Hydel Power Station as a whole of comparable capacity with 3.3/33KV Substation, equipment including their control & protection system-1No.				
02.	**Skilled Persons:** iv) 3 nos./ shift at Power House including 2nos for reserved shift				
03.	**Unskilled Person:** 1 no. at Power House (Sweeper)				

Note: Skilled personnel assigned for this job should have previous experience in the installation of similar equipment and fully familiar with the connection details and have knowledge of reading Mechanical/ Electrical drawings. Contractor shall also employ required number of skilled labour as considered necessary to complete the work as per schedule. Wages must be incorporated. The agency has to engage at least 8nos. of skilled personnel to allow everybody a weekly off day and leave taken by the working personnel in order to maintain smooth O&M activities maintaining the manpower strength.

Signature of the Bidder:

Seal of the Company:

Date:

ANNEXURE-IX

(For work mentioned under Sl.No.5 in section-I of NIeT)

CONTRACTOR'S PERSONNEL FOR REGULAR ESTABLISHMENT

Sl. No.	Category	Name	Educational Qualification	Experience	Wages
01.	Site-in-charge (should have minimum qualification of Diploma or equivalent in Engineering and possesses sufficient experience in undertaking Maintenance & Operation work of Small Hydel Power Station as a whole of comparable capacity with 3.3/33KV Substation, equipment including their control & protection system-1No.				
02.	**Skilled Persons:** v) 2 nos./ shift at Power House including 2nos for reserved shift				
03.	**Semi-skilled Persons:** 2 nos. (Guards)				
03.	**Unskilled Person:** 1 no. at Power House (Sweeper)				

Note: Skilled personnel assigned for this job should have previous experience in the installation of similar equipment and fully familiar with the connection details and have knowledge of reading Mechanical/ Electrical drawings. Contractor shall also employ required number of skilled labour as considered necessary to complete the work as per schedule. Wages must be incorporated. The agency has to engage at least 8nos. of skilled personnel to allow everybody a weekly off day and leave taken by the working personnel in order to maintain smooth O&M activities maintaining the manpower strength.

Signature of the Bidder:

Seal of the Company:

Date:

ANNEXURE-X

STATEMENT OF SIMILAR TYPE OF WORKS EXECUTED DURING LAST 07 (SEVEN) YEARS

Sl. No.	Name of the work executed	Nature of the project to which the work is related	Order No. and date(s)	Name of Owner/ order issuing authority	Financial year	Executed value (Rs.)	Date of commencement, scheduled completion & actual completion	Whether Completion/ Payment Certificate(s) submitted (Y/N)

Remarks, if any:

.....

SIGNATURE OF THE TENDERER WITH OFFICE SEAL

ANNEXURE-XI

PROFORMA OF DECLARATION OF BLACK LISTING/HOLIDAY LISTING

(On Bidder's Letter Head)

In the case of a Proprietary Concern:

I hereby declare that neither I in my personal name or in the name of my Proprietary concern M/s _____ which is participating in the Tender no._____nor any other concern in which I am proprietor nor any partnership firm in which I am involved as a managing partner have been placed on black list or holiday list declared by WBSEDCL, WBSETCL or any central/ state power utility services/Statutory/Regulatory/Government Authorities/PSU, except as indicated below:

(Here give particulars of black listing or holiday listing, and in absence thereof state "NIL")

In the case of a Partnership Firm:

We hereby declare that neither we, M/s _____ participating in the tender no._____ nor any partner involved in the management of the said firm either in his individual capacity or as proprietor or managing partner of any firm or concern have or has been placed on black list or holiday list declared by WBSEDCL, WBSETCL or any central/ state power utility services/Statutory/Regulatory/Government Authorities/PSU, except as indicated below:

(Here give particulars of black listing or holiday listing, and in absence thereof state "NIL")

In the case of a Company:

We hereby declare that we have not been placed on any black list or holiday list declared by WBSEDCL, WBSETCL or any central/ state power utility services/Statutory/Regulatory/Government Authorities/PSU, except as indicated below:

(Here give particulars of black listing or holiday listing, and in absence thereof state "NIL")

It is understood that if this declaration is found to be false in any particular WBSEDCL, WBSETCL or Administrative Ministry, shall have the right to reject my/our enlistment. Bid and if the bid has resulted in a contract, the contract is liable to be terminated.

Signature with date & seal of the Bidder

ANNEXURE-XII

OTHER ALLIED INFORMATION OF THE BIDDER(S):

1.	Vendor Id. under WBSEDCL (if Any) of the Bidder	
2.	Bidder/Vendor Name (35 Character max.)	
3.	Postal Address of the Bidder	
.4.	Pin Code	
5.	Telephone no. of the Bidder	
6.	Mobile no. of the Bidder	
7.	e-Mail Id. of the Bidder	
8.	GSTIN no. of the Bidder	
9.	PAN no. of the Bidder	
10.	Bank Account Name of the Bidder	
11.	Bank Name	
12.	IFS code	
13.	Bank A/c no. of the Bidder	

Signature with date & seal of the Bidder

ANNEXURE-XIII

EVIDENCE OF ACCESS TO OR AVAILABILITY OF CREDIT FACILITIES

(To be given by banker of bidder)

BANK CERTIFICATE

This is to certify that M/s ……
(FULL NAME AND ADDRESS) who are submitting their Bid to……against their tender specification vide Ref. No…… and date…… is our customer for the past……years.

Their financial transactions with our bank have been satisfactory. They enjoy the following fund based and non fund based limits including guarantees, L/C and other credit facilities with us against which the extent of utilization as on date is also indicated below:

Sl.No.	Type of Facility	Sanctioned limit as on date	Utilization as on date……..

This letter is issued at the request of M/s……

Sd/-

Name of Bank ……

Name of authorized Signatory……

Designation……

Phone No……

Address……

SEAL OF THE BANK

ANNEXURE-XIV

Pro-forma for Contract Agreement

(To be executed on Non-Judicial Stamp Paper of Rs. 100/-)

This AGREEMENT MADE the _____ day of _____ 2022 BETWEEN WEST BENGAL STATE ELECTRICITY DISTRIBUTION COMPANY LIMITED (WBSEDCL), a Company incorporated under the Companies Act, 1956 and a West Bengal Government Enterprise having its registered office at "Vidyut Bhavan", Block-DJ, Sector-II, Salt Lake City, Kolkata-700091, hereinafter referred to as the "Employer" (which expression shall unless excluded by or repugnant to the context be deemed to include its successors-in interest and assigns) of the ONE PART.

AND

M/S ---------- having its registered office at ----------, hereinafter referred to as the "CONTRACTOR" (which expression shall unless excluded by or repugnant to the context be deemed to include its successors -in interest and permitted assigns) of the OTHER PART.

WHEREAS the WEST BENGAL STATE ELECTRICITY DISTRIBUTION COMPANY LIMITED (WBSEDCL) had awarded a contract (Name of the work) vide LOA bearing Memo No: ---------- dated ---------- (PO No- ----------) a copy thereof is annexed hereto and made part of this agreement.

NOW, THIS AGREEMENT WITNESSETH as follows :-

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement viz;

(a) this Proforma of Agreement

(b) Bid Document including BOQ

(c) Letter of Award

(d) Offer by the Contractor

3. The aforesaid documents shall be taken as Complementary and mutually explanatory of one another, but in case of ambiguities or discrepancies, shall take precedence in the order set out above.

4. In considerations of the payments to be made by the WBSEDCL to the Contractor as hereinafter mentioned, the contractor hereby covenants with the WBSEDCL to provide goods & services and remedy defects therein in conformity, in all respects, with the provisions of the Contract.

5. The WBSEDCL hereby covenants to pay the contractor in consideration of the provision of goods and services and remedying defects therein and completion of the works, the contract price at the times and in the manner prescribed by the Contract.

IN WITNESS WHEREOF the parties hereto have caused their respective common seals to be hereto affixed (or have hereunto set their respective hands and seals) the day and year first above written.

For and on behalf of BIDDER	For and on behalf of the
West Bengal State Electricity	
Distribution Company Limited	
Name :	Name :
Designation :	Designation :
In the presence of -	In the presence of -
1) _____	1) _____
2) _____	2) _____

ANNEXURE-XV

SPECIMEN COPY OF INDEMNITY BOND

(To be executed on Non-Judicial Stamp Paper of Rs. 100/-)

BY THE PRESENT INDEMINITY BOND EXECUTED by me / us on this……Day of……, 20……...I/We having Registered Office/ residing at ……...

(hereinafter called "OBLIGOR/OBLIGORS" which expression shall mean and includes my/our Successors legal representatives, assigns) do hereby binds myself / ourselves and also our Company/ firm …….. after having the power to bind so with the promise and undertaking in favour of the West Bengal State Electricity Distribution Company Limited, a government Company within the meaning of sec.617 of the Indian Company's act having registered office at Bidyut Bhavan, Block-DJ ,Sector-II, Salt Lake City, Kolkata-700091 (hereinafter called as OBLIGEE, which expression shall mean and include it's legal representative, administrators assigns.

WHEREAS OBLIGOR/OBLIGORS has /have been awarded to execute the job/works under letter no……Dated……issued by the OBLIGEE after having observing necessary formalities the details of which is described in the schedule given hereunder as per letter mentioned herein-above and whereas the said job/works will be/likely to be done in places covered under Employees State Insurance Act (ESI) and /or the Workmen Compensation Act (W.C. Act) and /or other laws relating to the Labour Management and Welfare.

AND WHEREAS according to the condition of the contract the OBLIGOR/OBLIGORS is under obligation to execute this Indemnity Bond before the commencement of actual execution and OBLIGOR/OBLIGORS is/are aware that unless this Indemnity Bond is executed in accordance with the condition of contract before the actual execution in accordance with law the OBLIGEE shall have the power to deem that actual work has been started within the meaning of the contract before the execution of this Indemnity Bond.

NOW THIS INDENTURE WITNESS THAT I / We the OBLIGOR/OBLIGORS do hereby undertake.

1. THAT the OBLIGEE shall not be held responsible for any type of accident which may take place during the course of work undertaken by the OBLIGOR/OBLIGORS.
2. THAT the OBLIGOR/OBLIGORS will take adopt all safety norms in respect of each and every workmen labour personnel according to the rules or to the satisfaction of the OBLIGEE in all cases.
3. THAT the OBLIGOR/OBLIGORS undertakes to engage only those labour worker or any other personnel whether skilled or unskilled or any other person whether in technical management or non-managerial or any other capacity in the area covered under Employees State Insurance Act, 1948 who has/have insurance coverage within the meaning of Employees State Insurance Act and further undertakes NOT to engage any person in the area covered under the Employees State Insurance Act, who does / do not has/have insurance coverage within the meaning of Employees State Insurance Act.
4. THAT the OBLIGOR/OBLIGORS further undertakes to engage only those labour worker, or any other personnel, whether skilled or unskilled, whether in technical, managerial or non-managerial or any other capacity in the area NOT covered under Employees" State Insurance Act who has life insurance for the sum assured equivalent to the amount of Compensation under the Employees" Compensation Act in case of

accidental death or inquiry and such insurance has been effected by the OBLIGOR/OBLIGORS.

5. THAT the OBLIGOR/OBLIGORS undertakes / undertake to indemnify and keep harmless the OBLIGEE from all claims action proceedings and of risk damage danger to any person whether belonging to/or not belonging to OBLIGOR/OBLIGORS.

6. THAT the OBLIGOR/OBLIGORS shall keep harmless the OBLIGEE from all claims compensation damages any proceedings in respect of any of its employee/workmen under the Workmen Compensation Act. Act or any other laws for the time being in force.

7. THAT if during the course of execution of work as stated in the letter mentioned hereinabove issued by the OBLIGEE, it is found that the OBLIGOR/OBLIGORS has/have not complied with guidelines/formalities within the meaning of Employees" State Insurance Act or Workmen Compensation Act or any other laws relating to the Labour Welfare for the time being in force, and also has not observed the safety norms in accordance with the law to the satisfaction of the OBLIGEE, the OBLIGEE shall have the right to stop the execution of work/job and the period of such stoppage shall continue till adequate safety and other compliance mentioned hereinabove under the labour welfare legislation have been observed and such period of stoppage shall not be taken into account for the calculation of the total period of completion of work for which the OBLIGOR/OBLIGORS is responsible to complete the work/job and it will be deemed that discontinuance was due to default of OBLIGOR/OBLIGATOR.

8. THAT , if at any time due to exigency, the OBLIGEE i.e. the West Bengal State Electricity Distribution Company Limited as the Principal Employer, becomes liable to pay any such compensation mentioned hereinabove, whether on failure of the OBLIGOR/OBLIGORS or for any other reason , the OBLIGEE shall have the right to recover the said amount from any amount receivable by OBLIGOR/OBLIGORS or any bank guarantee deposited or anything payable whether in connection with this contract or other contract by the OBLIGEE to the OBLIGOR/OBLIGORS.

9. THAT the OBLIGOR/OBLIGORS is/are aware and accept that for the persistent or repeated violation of any condition mentioned in this Indemnity Bond, the OBLIGEE shall have right to terminate the contract of work issued by the OBLIGEE to OBLIGOR/OBLIGORS.

SIGNED AND DELIVERED

BY THE OBLIGOR/OBLIGORS ……

Signature ……

WITNESS

Name, Designation ……..

Signature ……..

Name, Designation .....

Signature .....

ANNEXURE-XVI

Proforma for Performance Bank Guarantee

Bank Guarantee No.....

Date ……

To,

Dear Sirs,

In consideration of West Bengal State Electricity Distribution Company Limited (hereinafter referred to as WBSEDCL which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) having awarded to M/s ----------*[Contractor's Name]* with its Registered/Head Office at ---------- (hereinafter referred to as the 'Supplier, which expression shall unless repugnant to the context or meaning thereof, include its successors administrators, executors and assigns), an LOA bearing Memo No.---------- dated ---------- (PO No. ----------) valued at Rs.---------- for the work of (Name of the work) and the Contractor having agreed to provide a Performance Security Guarantee in terms of the provisions of the said Order for faithful and due fulfilment of all obligations under the Order equivalent to Rs.----------to the WBSEDCL

We .....*[Name &Address of the Bank]* .. .. having its Head Office at----------

..... (hereinafter referred to as the 'Bank', which expression shall, unless repugnant to the context of meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay WBSEDCL, on demand any and all monies payable by the Contractor to the extent of ***Rs.---------- (In Words)****as aforesaid at any time upto ----------(Date) without any demur, reservation, contest, recourse or protest and/or without any reference to the Supplier. Any such demand made by WBSEDCL on the Bank shall be conclusive and binding notwithstanding any difference or dispute between WBSEDCL and the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. The Bank undertakes not to revoke this guarantee during its currency without previous consent of WBSEDCL and further agrees that the guarantees herein contained shall continue to be enforceable within claim period of Ninety (90) days after the validity of this guarantee.*

WBSEDCL shall have the fullest liberty, without affecting in any way the liability of the Bank under this guarantee, from time to time to extend the time for performance of the Order by the Contractor. The WBSEDCL shall have the fullest liberty, without affecting in any way this guarantee to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce or to forbear to enforce any covenants, contained or implied, in the Order between the WBSEDCL and the Contractor or any other course or remedy or security available to the WBSEDCL. The Bank shall not be released of its obligations under these presents by any exercise by the WBSEDCL of its liberty with reference to the matters aforesaid or any of them or by reason of any other acts of omission or commission on the part of WBSEDCL or any other indulgence shown by the WBSEDCL or by any other matter or thing whatsoever which under law would, but for this provision have the effect of relieving the Bank.

The Bank also agrees that WBSEDCL at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee WBSEDCL may have in relation to the Contractor 's liabilities.

Notwithstanding anything contained herein above liability under this guarantee is restricted **Rs.---------- (In Words)** And shall remain in force up to and including ----------(Date) And shall be extended from time to time for such period ,as may be desired by M/s ---------- on whose behalf this guarantee has been given.

All rights of WBSEDCL under this guarantee shall be forfeited and Bank shall be relieved and discharged from all liabilities there under unless a demand or claim is lodge by WBSEDCL under this guarantee against the Bank within ninety (90)]days from the above mentioned date or from the extended date.

Dated this .....day of ..... 2023 ..... at
....

WITNESS

Signed for and on behalf of the Bank

1.
....

(Signature)

(Signature)

(Name)

(Name)

(Official Address)

(Designation with Bank Stamp)

Attorney as per Power of Attorney No. .....
Dated..... .

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

(Signature)

(Name)

(Official Address)

Communication address of the Bank

Name of the contact person
Tel. No. Fax No. Email: